

MATERIALS TOWARD A MONOGRAPH OF THE GENUS CITHAREXYLUM. IV

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CITHAREXYLUM FRUTICOSUM var. SMALLII Moldenke

This variety is named in honor of the late Dr. John Kunkel Small (1869--1938), whose devoted lifetime of work on the fascinating flora of the southeastern United States will ever remain a dignified monument to his memory, whose scholarly researches in the Polygonaceae, Oxalidaceae, Cactaceae, Areaceae, and many other plant groups in the North American flora form a priceless contribution and much-needed stimulus to the scientific understanding of these groups, and whose ardent adherence, often in the face of bitter and cruel opposition, to the principles in which he so firmly believed in the fields of botanical nomenclature and taxonomy has won him the admiration and respect of his colleagues, who would consider it a great honor and privilege to be able to follow in his footsteps and many of whom wish that they had the courage to do so. Dedicated and sincere scientists, like Dr. Small, with views at variance to those of the majority in their field of research, are urgently needed if science is to progress and not stagnate due to the lethargy and laissez-faire attitude of the majority.

The typical form of the variety is from Andros island and is well exemplified by Brace 4898, 5140, 6724, and 7062 and by Small & Carter 8583. The Eleuthera island specimens (E. G. Britton 6402; Britton & Millspaugh 5615) have somewhat broader leaves, but otherwise agree well with Northrop & Northrop 608 from Andros. The specimens from East Caicos island (Millspaugh & Millspaugh 9065) and Long island (Coker 814) have broader leaves and approach the narrower-leaved forms of typical C. fruticosum. In all, 36 herbarium specimens, including the type and 5 mounted photographs, have been examined.

Citations: BAHAMAS: Brace 4898 (F--199930, N), 5140 (F--200156, N), 6724 (F--214139, N), 7062 (F--214458, N, N); E. G. Britton 6402 (F--213913, F--213914, N); Britton & Millspaugh 5615 (F--198441, N); W. C. Coker 226 (N), 814 (N); Millspaugh & Millspaugh 9065, in part (F--287819, N); Northrop & Northrop 608 (B, B, C, F--130695, G, K, N, X); Small & Carter 8583 (B--isotype, B--photo of type, D--555871--isotype, F--283602--isotype, G--isotype, K--isotype, K--photo of type, N--type, N--photo of type, P--isotype, S--photo of type, W--758011--isotype, Z--photo of type). CUBA: Oriente: Hioram 3956 (Ha), s.n. [Julio 1920] (Sc).

CITHAREXYLUM FRUTICOSUM var. SUBSERRATUM (Sw.) Moldenke, Phytologia 1: 17. 1933.

Synonymy: Citharexylon subserratum Sw., Prodr. Veg. Ind. Occ. 91. 1788. Citharexylum subserratum Sw. apud Gmel. in L., Syst.

Nat., ed. 13, 2 (2): 943. 1796. Citarexylum fruticosum var. sub-serratum (Sw.) Moldenke apud Alain in León & Alain, Fl. Cuba 4: 300, sphalm. 1957. Citarexylum subserratum Sw. apud Alain in León & Alain, Fl. Cuba 4:300, in syn. 1957.

Literature: Jacq., Ic. Pl. Rar., ed. 1, 1: 4, pl. 82 (1781) and ed. 2, 1: 12, pl. 118. 1786; Jacq., Collect. Bot. 1: 72. 1786; Sw., Prodr. Veg. Ind. Occ. 91. 1788; Gmel. in L., Syst. Nat., ed. 13, 2 (2): 943. 1796; Lam., Tabl. Encycl. Méth. 3: pl. 545, fig. 2. 1797; Pers., Syn. Pl. 2: 142. 1806; Poir. in Lam., Encycl. Méth. Bot. Suppl. 2: 368. 1811; Poir. in Lam., Dict. Sci. Nat. 9: 286. 1817; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng., Syst. Veg., ed. 16, 2: 764. 1825; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 74. 1845; Schau. in A. DC., Prodr. 11: 614. 1847; Griseb., Fl. Brit. West Ind. 497. 1861; Jacks., Ind. Kew. 1: 550. 1893; Fawcett, Prov. List Indig. Nat. Fl. Pl. Jamaic. 30. 1893; Moldenke, Phytologia 1: 17. 1933; Moldenke, Alph. List Common Names 14 & 24. 1939; Moldenke, Geogr. Distrib. Avicenn. 5, 7, & 36. 1939; Moldenke, Suppl. List Common Names 6. 1940; Moldenke, Prelim. Alph. List Invalid Names 15. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 24, 26, 71, & 88. 1942; Moldenke, Alph. List Invalid Names 13. 1942; Moldenke, Phytologia 2: 96. 1944; Moldenke, Alph. List Cit. 1: 39, 74, 102, 118, 188, 274, 275, 284, 306, & 320 (1946) and 2: 403, 408, 434, 487, 501, 507, 566, 581, & 647. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 43, 47, 157, & 179. 1949; Moldenke, Alph. List Cit. 3: 653, 654, 756, 760, 769, & 774 (1949) and 4: 983, 1028, 1038, & 1054. 1949; Alain in León & Alain, Fl. Cuba 4: 300. 1957.

Illustrations: Lam., Tabl. Encycl. Méth. 3: pl. 545, fig. 2. 1797.

This variety differs from the typical form of the species in that its leaf-blades are undulate, sinuate, subserrate, or even distinctly and sharply serrate along the margins from the apex to about the middle. The blades are mostly glabrous, often more or less impressed-punctate beneath, varying to sparsely villous-pubescent beneath. They are mostly obtusely rounded, emarginate, and sharp-serrate at the apex (acute on non-serrate leaves), and smaller (2--6 cm. long and 1.5--3.5 cm. wide) than in the typical form.

The type of the variety was collected by Olaf Peter Swartz on the island of Hispaniola, probably in what is now the Dominican Republic, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The variety is apparently limited to eastern Cuba and Hispaniola, although it is also known in the cultivated state elsewhere. Grisebach reports it from Jamaica on the basis of a March collection. This collection, however, is probably the one cited by me under typical C. fruticosum L. Grisebach's description of the leaves as merely "repand-entire" seems to lend support to this contention.

The variety has been confused in the past with C. pentandrum Vent., C. caudatum L., and C. fruticosum var. villosum (Jacq.) O. E. Schulz, and was misidentified by Lamarck as Volkameria

serrata L. [= Clerodendrum serratum (L.) Moon]. It inhabits pine-lands, arid plains, dry mountainsides, savannas, and woods, and has been found along roadsides and among rocks, ascending to 2750 feet altitude. It is described as a shrub or tree, 5—12 feet tall. Its racemes, like those of var. smallii Moldenke, are mostly abbreviated. The flowers are white, and the fruit is "red and black". It has been collected in anthesis in January, February, July, and August. Common names recorded are "citharexylum denticulé", "cotelet denticulé", "grenarde", "grenardo", and "palo santo".

The teeth in many cases, as in the type specimen, are limited to the rounded leaf-apex, where they stand erect and vary from 2 to 6 in number. This condition is well illustrated by Nash & Taylor 1245, which matches the type perfectly. On the other hand, Leonard & Leonard 13459 represents a form with the teeth large and coarse, borne at the sides of the leaf rather than at the apex. Leonard & Leonard 13154 represents a form with merely undulate or sinuate leaf-margins and may possibly be the form referred to by Grisebach. In the type collection the leaf-blades are subvillous-pubescent along the larger venation beneath, but in all the other specimens cited below they are glabrous or subglabrate beneath and more or less impressed-punctate. The Cuban collection is said to be taken from a shrub 3 meters tall; its leaves all have small erect teeth near their apex only.

The variety often has its trunk attacked by the fungus Lenzites gussonei Scalia and by Irene longipoda (Gaill.) Toro. The plant described and figured by Jacquín in his Ic. Pl. Rar. pl. 82 & 118 (1781 and 1786) and his Collect. Bot. (1786) appears to be much like var. subserratum, but the former, at least, is actually the type of his var. villosum.

In all, 47 herbarium specimens, including the types of all the names involved, and 7 mounted illustrations and photographs have been examined.

Citations: CUBA: Oriente: León 11864(Ha). HISPANIOLA: Dominican Republic: Bertero s.n. [S. Domingo, 1821] (Dc); Swartz s.n. (B—photo of type, Em—istotype, K—photo of type, N—photo of type, S—type, Z—photo of type). Haiti: W. Buch 1089 (B, S); Christ 2159 (B); Ekman H. 310 (B, S), H. 803 (B, S); E. C. Leonard 8926 (Ca—318036, F—574252, W—1300256); Leonard & Leonard 13154 (A, N, W—1451831), 13459 (N, W—452110); Nash & Taylor 1245 (B, F—185304, N), 1314 (B, E—805280, F—185305, N), 1328 (B, F—185306, N, N—photo, W—792207, Z—photo), 1690 (F—185307, N). WEST INDIES: Island undesignated: Herb. Adanson s.n. (P, P); Herb. Rottböll. s.n. (Cp); Herb. Mus. Bot. Berol. s.n. (B); Nuttall s.n. (D). CULTIVATED: France: Herb. Baillon s.n. [H. P., 16 Aout 1866] (P); Herb. Bütner s.n. (B); Herb. Hort. Paris. s.n. (Br); Herb. Jard. des Plantes s.n. (Mu—1385). Reunion: Néraud s.n. (Cb). Scotland: Herb. Univ. Edinb. s.n. (Ed).

LOCALITY OF COLLECTION UNDETERMINED: Collector undesigned s.n. (Dc); Herb. A. L. Jussieu 5092 (P, P); Herb. Lamarck s.n. (P).
MOUNTED ILLUSTRATIONS: Lamarck, *Illustr. pl.* 546, fig. 2 (Cb).

CITHAREXYLUM FRUTICOSUM var. *SUBVILLOSUM* Moldenke in Fedde, *Repert.* 37: 223. 1934.

Synonymy: *Citharexylum fruticosum* var. *angustifolium* Griseb. ex Moldenke, *Alph. List Invalid Names* 14, in syn. 1942. *Citharexylum fruticosum* var. *pentandrum* Duchass. ex Moldenke, *Alph. List Invalid Names* 14, in syn. 1942. *Citharexylum fruticosum* var. *subvillosum* Moldenke apud Alain in León & Alain, *Fl. Cuba* 4: 300, sphalm. 1957.

Literature: Moldenke in Fedde, *Repert.* 37: 223. 1934; Moldenke, *Lilloa* 4: 312. 1939; Moldenke, *Alph. List Common Names* 8, 13, & 24. 1939; Moldenke, *Geogr. Distrib. Avicenn.* 3-10, 12, & 36. 1939; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 4, 5, 24-28, 30, 33, 71, & 88. 1942; Moldenke, *Alph. List Invalid Names* 14. 1942; Moldenke, *Phytologia* 2: 96. 1944; Moldenke, *Alph. List Cit.* 1: 26, 51, 52, 55, 60-63, 65, 66, 137, 140, 167, 179-182, 184-186, 190, 198, 204, 207, 208, 260, 261, 272, 281, 282, 294, 299, 302, 305-310, & 315 (1946), 2: 333, 336, 338, 355, 395, 402, 419, 420, 423, 425, 443, 466, 487, 509, 512, 513, 521, 543, 544, 548, 549, 559, 581, 612, 631, 640, 646, & 647 (1948), 3: 654, 739, 751, 756, 771, 789, 801, 810, 825, 826, 853, 867, 870, 888, 889, 902, 906, 917, 928, 929, 936-938, & 944 (1949), and 4: 1008, 1017, 1018, 1020, 1023, 1027, 1033, 1035-1037, 1039, 1042, 1047, 1057, 1063, 1065, 1085, 1087, 1111, 1117, 1143, 1144, 1158, 1177, 1206, 1236, & 1296. 1949; Moldenke, *Phytologia* 3: 140. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 9, 42, 43, 46, 47, 49-51, 54, 57, 68, 157, & 179. 1949; H. N. & A. L. Moldenke, *Anal. Inst. Biol. Mex.* 20: 4. 1949; Moldenke, *Journ. Calif. Hort. Soc.* 15: 85. 1954; Moldenke in Cheesman, *Pl. Trin. & Tob.* 2 (6): 21-22. 1955; Alain in León & Alain, *Fl. Cuba* 4: 300. 1957.

This variety differs from the typical form of the species in that its leaf-blades are roughened-scabridous, densely puberulent, or very short-pubescent beneath or else subvillos along the midrib and secondaries. Its racemes are mostly abbreviated.

The type of the variety was collected by Nathaniel Lord Britton (no. 2101) in a thicket at Fisherman's Point, Guantanamo Bay, Oriente, Cuba, between March 17 and 30, 1909, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is said to inhabit arid thickets, hillside thickets, forests, hammocks, hillsides, low calcareous ground, sand, coastal coppice, and the scrub on coral limestone near the sea. Collectors describe it as a shrub 2-3 feet tall or even as a tree to 8 meters in height. It has been collected in anthesis in January, March, June, September, and October, and in fruit from November through March and in June and September. It has been found from sea level to 530 meters altitude.

It has hitherto been confused with var. *villosum* (Jacq.) O. E.

Schulz, which it sometimes approaches in characters, and, of course, with the typical form of C. fruticosum L. Herbarium specimens have been misidentified as C. cinereum L. [=C. fruticosum], C. spinosum L., C. quadrangulare Jacq. [=C. spinosum], C. albi-caule Turcz., C. subserratum Sw. [=C. fruticosum var. subserratum (Sw.) Moldenke], C. villosum Jacq. [=C. fruticosum var. villosum], C. bahamense Millsp. [=C. fruticosum var. villosum], C. pulverulentum Pers. [=C. pentandrum Vent.], and Tabernaemontana citrifolia L. (in the Apocynaceae).

León 11393 has its leaves all very coarsely dentate to below the middle, but was apparently taken from coarse watersprouts, as León himself suggests on the label. The Harshberger s.n. [August 12, 1911] collection exhibits only a few hairs in the axils of the leaf-blades, and may actually be the typical form of the species instead of this variety. A piece of the bark is preserved on the sheet of Britton, Britton, & Shafer 41 at Chicago.

The variety exists in cultivation in Hale Plaza, Laguna and Pedregosa Streets, Santa Barbara, California. Vernacular names recorded for it are "arbol gándul", "árbol gándul", "cateycillo", "gallito", "heuvo de gallo", "huevo de gallo", "penda", "pendula blanca", and "roble amarillo". Of these, however, "cateycillo", "gallito", and "roble amarillo" are also applied to typical C. fruticosum, and "penda" is applied to C. fruticosum, C. fruticosum var. villosum, C. caudatum L., C. spinosum, and Cornutia pyramidata L. In all, 183 herbarium specimens, including the types of all the names involved, and 5 mounted photographs have been examined.

Citations: FLORIDA: Dade Co.: E. J. Alexander s.n. [Hattie Bauer Hammock, May 1930] (N); N. L. Britton 40 (F—172645, N), s.n. [January 21st, 1905] (Ur); H. C. Cowles S.20-20, in part (Ob—61487); Fennell 214 (Ar—15867); A. P. Garber s.n. [Miami, Feb.—July 1877] (D—753740); Harshberger s.n. [August 12, 1911] (Up—63374); A. S. Hitchcock s.n. [Miami, Mar. 1903] (F—231804); Mosier s.n. [Aug. 1928] (N); E. J. Palmer 27501 (A, E—931097); Safford & Mosier 95 (W—1035978), 228 (W—1036068); E. Scull s.n. [Long Pine Key, 6/14/37] (Fl—27400), s.n. [Royal Palm State Park, 6/14/37] (Bt—46026); Small & Small 4719 (H—43165, N, S). Monroe Co.: Blodgett s.n. [Key West] (Du—177394); Cuthbert s.n. [Key West, May 6, 1919] (Fl—20946); L. E. Scull s.n. [Big Pine Key, 1/21/40] (Fl—31503); J. H. Simpson 478 (C, G, W—57464); E. West s.n. [Key West, 11-21-30] (Fl—20950, Fl—20951). Palm Beach Co.: A. S. Hitchcock 4488 (F—233565); H. J. Webber 431 (F—228556). BAHAMAS: Boos s.n. (V); Brace 1882, in part (F—185993); Britton & Brace 499 (B, F—171896, N); Britton & Millspaugh 233a (W—429736); Millspaugh & Millspaugh 9065, in part (W—1476416). CUBA: Havana: Baker & Van Hermann 1958, in part

(Es, F—185601, G, N, W—845391); A. S. Hitchcock s.n. (F—235035); Lane 435 (K); León 6247 (Ha), 6255 (Ha), 7156 (Ha), 11393 (Ha); Schott 89 (Bm, F—41518, N, W—57326); Van Hermann 5067 (Es), 5069 (B, F—189253, N, Po—63523). Oriente: Acuffa 13329 (Es, N), 17181 (Es); N. L. Britton 2101 (B—photo of type, K—photo of type, N—type, N—photo of type, S—photo of type, W—847748—isotype, Z—photo of type); Clément 3015 (Ha, N); Ekman 1367 (S), 4160 (S), 8638 (N), 9431 (S, S); Ekman & León 14727 [Herb. Roig 5785] (Es); Hioram 3956 (N); Pollard, Palmer, & Palmer 28, in part (Cm, E—119074); Roig 1596 (Es); Shafer 7924 (N, Ut, W—696434); C. Wright 438 (G, N, Pa, S, W—57319, X). Province undetermined: Sagra 207 (B, Bm, L, N), s.n. (B, N, P, P, P, V, V, V); C. Wright 349/1 [Herb. Sauvalle 1860] (Hv), 583/1 [71; Herb. Sauvalle 1769, in part] (Hv), 3663 (B, C, F—185308, G, K, Pa, S, W—57320), s.n. [1865; Herb. Sauvalle 1766, in part] (Hv). JAMAICA: W. Hooker s.n. (P, P). HISPANIOLA: Dominican Republic: Eggers 2389 (B, C, Vu, W—1323189); Ekman H.16013 (B, F—839504, S). Haïti: Leonard & Leonard 12075 (A, Cm, N, W—1450924). PUERTO RICO: Sintenis 2085 (B, B, Io—75746, L, Lu), 3418 (B, Cb, L, Le). CULEBRAS: Britton & Wheeler 215 (F—201249, N, N, W—655874, W—847273). VIRGIN ISLANDS: Anegada: Britton & Fishlock 1043, in part (K). St. John: Eggers 3054 (Ol). St. Thomas: Britton, Britton, & Shafer 41 (B, D—555938, E—720781, F—407747, K, N, W—757557); Curran 788 (F—740469), 828 (N); Duchassaing s.n. (E—119097); Eggers 661 (A, P, P), s.n. [16 June, 1876] (G), s.n. [St. Th., Novb. '80] (Pa), s.n. [July 1881] (W—1323190), s.n. [Jan. 1887] (B); C. A. Ehrenberg 198 (B); Herb. Grisebach s.n. (B); Paulsen 156 (F—131505); L. C. Richard s.n. (P); J. N. Rose 54 (A, F—689839, Us). Tortola: Shafer 1150 (F—407912, N, W—756859). Virgin Gorda: Fishlock 277 (W—1146832). LEEWARD ISLANDS: Dominica: Eggers s.n. [May 1881] (B). Guadeloupe: Duchassaing s.n. (B). St. Bartholomew: Forsström s.n. [Ins. St. Bartholomew] (S, S, S); Herb. Mus. Bot. Lund s.n. [Barthel.] (Lu). TRINIDAD: C. King s.n. [Trin. Bot. Gard. Herb. 7224] (N). WEST INDIES: Island undetermined: Collector undesignated s.n. (P); Eggers s.n. [1885] (Mi); Herb. Jewett s.n. (Mi); Herb. Mus. Bot. Berol. s.n. (B); Schlechtendal 2128 (S). FRENCH GUIANA: Leblond 281 (Cb). CULTIVATED: California: Popenoe 625 (Ar—1786). Cuba: Acuffa 15310 (Es, N). France: Perrottet s.n. [Jard. Pl. de Paris, 1818] (Cb). India: Herb. Bot. Gard. Saharanpore s.n. (W—281994). Italy: Herb. Jard. de Florencia s.n. (Cb). New York: Hartling s.n. [N. Y. Bot. Gard. Cult. Plants 12116] (N, Ur). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Mus. Bot. Stockholm 14 (S).

CITHAREXYLUM FRUTICOSUM var. VILLOSUM (Jacq.) O. E. Schulz in Urb., Symb. Ant. 6: 63. 1909.

Synonymy: Citharexylum villosum Jacq., Ic. Pl. Rar. 1: 12, pl. 118. 1786 [not C. villosum Donn. S., 1907]. Citharexylum molle Salisb., Prodr. 108. 1796 [not C. molle Jacq., 1804, nor H.B.K., 1818, nor Hook., 1940]. Citharexylum tomentosum Poir. in Lam., Encycl. Méth. Suppl. 2: 368. 1811 [not C. tomentosum H.B.K., 1817, nor Sessé & Moc., 1831]. Citharexylum villosum Jacq. ex Steud., Nom. Bot., ed. 1, 202. 1821. Citharexylum tomentosum Poir. ex Steud., Nom. Bot., ed. 1, 202. 1821. Citharexylum villosum f. angustifolium Griseb., Syst. Untersuch. Veg. Kar. 108. 1857. Citharexylum polystachyum Turcz., Bull. Soc. Nat. Imp. Mosc. 36 (3): 209. 1863. Citharexylum bahamense Millsp. in Britton, Bull. N. Y. Bot. Gard. 3: 450—451. 1905. Citharexylum bahamense Millsp. apud Prain, Ind. Kew. Suppl. 3: 43. 1908. Citharexylum villosum Jacq. ex Britton, N. Amer. Trees 825, sphalm. 1908. Citharexylum pentandrum Cham. apud O. E. Schulz in Urb., Symb. Ant. 6: 63, in syn. 1909 [not C. pentandrum Vent., 1800]. Citharexylum buekii Fischer, in part, ex Moldenke, Prelim. Alph. List Invalid Names 16, in syn. 1940. Citharexylum floridanum Rugel ex Moldenke, Alph. List Invalid Names 15, in syn. 1942. Citharexylum fruticosum var. villosum (Jacq.) O. E. Schulz ex Moldenke, Alph. List Cit. 1: 160, sphalm. 1946. Citharexylum villosum Jacq. ex Moldenke, Alph. List Invalid Names Suppl. 1: 5, in syn. 1947. Citharexylum villosum Jacq. ex Moldenke, Alph. List Invalid Names Suppl. 1: 5, in syn. 1947. Citharexylum pilosum Jacq. ex Moldenke, Alph. List Invalid Names Suppl. 1: 5, in syn. 1947. Citharexylum fruticosum var. villosum (Jacq.) O. E. Schulz ex Moldenke, Alph. List Cit. 2: 434, sphalm. 1948. Citharexylum fruticosum Schult. ex Roig, Dicc. Bot. 1: 823, in syn. 1953 [not C. fruticosum L., 1759]. Citharexylum fruticosum var. villosum (Jacq.) O. E. Schulz apud Alain in León & Alain, Fl. Cuba 4: 300, sphalm. 1957. Citharexylum villosum Jacq. apud Alain in León & Alain, Fl. Cuba 4: 300, in syn. 1957. Citharexylum polystachyum Turcz. apud Alain in León & Alain, Fl. Cuba 4: 300, in syn. 1957. Citharexylum ciliare Moran, in herb.

Literature: Jacq., Ic. Pl. Rar., ed. 1, 1: 4, pl. 82 (1781) and ed. 2, 1: 12, pl. 118. 1786; Jacq., Collect. Bot. 1: 72. 1786; Gmel. in L., Syst. Nat., ed. 13, 2 (2): 943. 1796. Salisb., Prodr. 108. 1796; Vent., Descr. Pl. Nou. Jard. Cels. pl. 47. 1800; Pers., Syn. Pl. 2: 142. 1806; Poir. in Lam., Encycl. Meth. Suppl. 2: 368. 1811; Poir. in Lam., Diet. Sci. Nat. 9: 285. 1817; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 763—764. 1825; Desf., Cat. Pl. Hort. Reg. Paris, ed. 3, 91. 1829; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 761. 1845; Schau. in A. DC., Prodr. 11: 610—

611. 1847; Griseb., *Abhand. König. Gesell. Wissen. Götting.* 7: 256. 1857; Griseb., *Syst. Untersuch. Veg. Kar.* 108. 1857; Agardh, *Theor. Syst. Pl.* pl. 22. 1858; Turcz., *Bull. Soc. Nat. Imp. Mosc.* 36 (3): 209. 1863; Bocq., *Rev. Verb. pl.* 13. 1863; Chapm., *Fl. South. U. S.*, ed. 2, 309. 1889; Jacks., *Ind. Kew.* 1: 550. 1893; Sarg., *Silva N. Amer.* 6: pl. 295. 1894; Briq. in Engl. & Prantl, *Nat. Pflanzenfam.* 4 (3a): 157 & 159. 1894; Britton, *Bull. N. Y. Bot. Gard.* 3: 450—451. 1905; Sarg., *Man. Trees N. Amer.* 788. 1905; Prain, *Ind. Kew. Suppl.* 3: 43. 1908; O. E. Schulz in Urb., *Symb. Ant.* 6: 59—60 & 63. 1909; Britton & P. Wils., *Scient. Surv. Porto Rico* 6: 145. 1925; Sudw., *Check List For. Trees U. S.* 231. 1927; Roig, *Est. Exp. Agron. Santiago Vegas Bol.* 54: 794. 1928; Stapf, *Ind. Lond.* 2: 220. 1930; Moldenke, *Phytologia* 1: 17. 1933; Moldenke, *Alph. List Common Names* 5, 10, 12, 14, 24, & 33. 1939; Moldenke, *Geogr. Distrib. Avicenn.* 3—11 & 36. 1939; Moldenke, *Suppl. List Common Names* 6. 1940; Moldenke, *Prelim. Alph. List Invalid Names* 15—18. 1940; Questel, *Fl. Isl. St-Barthol.* 179. 1941; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 5, 24—29, 71, & 88. 1942; Moldenke, *Alph. List Invalid Names* 13—15. 1942; Moldenke, *Phytologia* 2: 96. 1944; Moldenke, *Alph. List Cit.* 1: 24, 26, 27, 33, 39, 40, 46, 51, 55, 59, 61—66, 82, 98, 102, 103, 109, 112, 115, 117, 118, 120, 122, 131, 135, 141, 152, 160, 178, 183—185, 188, 189, 204, 207, 208, 212, 238, 240, 241, 272, 285, 286, 297, 298, 302—309, & 313—315. 1946; Moldenke, *Alph. List Invalid Names Suppl.* 1: 5. 1947; Moldenke, *Alph. List Cit.* 2: 333, 335, 352, 356, 358, 403, 404, 407, 408, 415, 419, 420, 425, 427, 429, 434—437, 443, 447, 448, 459, 465, 482, 484, 490, 503, 504, 524, 528, 543—545, 549, 554, 561, 562, 569, 579, 581, 640, 649, & 652 (1948), 3: 654, 717, 749, 750, 756, 757, 759, 774, 783, 789, 810, 813, 825, 836, 841, 842, 853, 856, 867, 880, 885, 889, 894, 930, 943, & 970 (1949), and 4: 983, 1016, 1020, 1026, 1027, 1029, 1033, 1035, 1036, 1038, 1039, 1045, 1047, 1049, 1052, 1054, 1057, 1061—1063, 1068, 1082, 1106, 1137, 1206, 1231, 1232, & 1304. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 9, 42, 43, 46, 47, 49—52, 54, 55, 157, & 179. 1949; Roig, *Dicc. Bot.* 1: 823 and 2: 1003. 1953; Moldenke, *Journ. Calif. Hort. Soc.* 15: 85. 1954; Alain in León & Alain, *Fl. Cuba* 4: 300. 1957.
- Illustrations: Jacq., *Ic. Pl. Rar.*, ed. 1, 1: pl. 82. 1781; Jacq., *Ic. Pl. Rar.* 1: pl. 118 (colored). 1786; Agardh, *Theor. Syst. Pl.* pl. 22. 1858; Bocq., *Rév. Verb. pl.* 13. 1863; Sarg., *Silva N. Amer.* 6: pl. 295. 1894; Briq. in Engl. & Prantl, *Nat. Pflanzenfam.* 4 (3a): 157. 1894; Sarg., *Man. Trees N. Amer.*, ed. 1, 788. 1905.

This variety differs from the typical form of the species in that its leaf-blades are densely velutinous-pubescent or villous-pubescent beneath. This velutinous villosity often extends to a greater or less degree to the upper surface of the blades, the petioles, peduncles, rachis, pedicels, calyx, fruiting-calyx, twigs, and branchlets. The plant is described as a tree, to 25 feet tall, the trunk to 7 inches in diameter, the corolla white and pilose, and the fruit blackish.

The type of the variety was collected from a cultivated plant

in the botanical garden at Vienna, Austria, apparently grown from seed sent from Santo Domingo. The type of C. bahamense is Britton & Brace 233 from a coppice on Farrington Road, New Providence island, Bahamas, while that of C. polystachyum is Linden 1975 from Santiago to Río Guasso, Cuba. The type of C. tomentosum Poir. was collected on the island of St. Thomas and is preserved in the Desfontaines herbarium. Poiret in his original description admitted that he was unacquainted with C. villosum Jacq. and that his plant seemed to be very close to that of Jacquin.

Common names recorded for the plant are "bois cotelette", "citharexylum velu", "cotelet tomenteux", "cotelet velu", "cutlet", "fiddle wood", "fiddlewood", "grenard", "penda", "pende", "roble amarillo", and "white fiddlewood". Of these, "bois cotelette" is applied also to C. fruticosum var. brittonii Moldenke, "roble amarillo" to C. fruticosum L., "cutlet" to C. fruticosum, C. fruticosum var. brittonii, and C. spinosum L., "penda" to C. caudatum L., C. fruticosum, C. fruticosum var. subvillosum Moldenke, C. spinosum, and Cornutia pyramidata L., "white fiddlewood" to C. caudatum, C. fruticosum, C. fruticosum var. brittonii, Vitex capitata Vahl, and V. compressa Turcz., and "fiddlewood" to C. fruticosum, C. fruticosum var. brittonii, C. spinosum, Cornutia pyramidata, Petitia domingensis Jacq., Vitex gaumeri Greerm., and V. umbrosa Sw. The name "cotelet tomenteux" was by error ascribed to C. tomentosum H.B.K. by me in my Suppl. List Common Names 6 (1940).

Material of this variety has often been confused in herbaria with C. cinereum L. [= C. fruticosum], C. teres Jacq. [= C. spinosum], C. caudatum, and C. fruticosum itself. The variety is widely cultivated in botanical gardens. Some specimens are truly remarkable for the density and widespread occurrence of the velutinous villosity over the plant. Some specimens, however, such as Valeur 112, vary in their characters toward var. subvillosum, while others, like Valeur 662, are very typical and if seen alone and compared with the typical form of C. fruticosum would certainly be said to represent a distinct species by most impartial observers. Every intermediate form, however, exists, most of which are herein referred to var. subvillosum. Leonard 4991 is remarkable in having terminal racemes 30 cm. in length! Britton, Britton, & Brown 5838 represents a shoot with deeply and coarsely dentate leaf-blades. A similar shoot is seen on Ekman H.1372 in the United States National Herbarium, while a very few, scattered, small, slender, sharp, subapiculate teeth appear on the leaves of the type specimen as well as on Boos s.n., Ehrenberg s.n., and some other collections. Dentate leaves are found on Christ 1909, 1911, and 1981, Picarda 531, and Bertero 607, while the cultivated specimen from Denmark has its leaf-blades even more strongly dentate than those on the type specimen. The Copenhagen sheet of Raunkiaer 878 represents a vigorous shoot whose leaves are re-

markable in being caudate-acuminate at the apex.

The plant is said by collectors to inhabit copses, thickets, roadsides, rocky hillsides, scrubland, coastal thickets, coastal cliffs, pine forests, semi-arid pine regions, and woods along the coast, ascending to 400 meters altitude. It has been collected in anthesis in March, May, and June, and in fruit in February, March, and June. Valeur refers to the fruit as "blackish". Millspaugh regards Nash 991 as very typical of the variety. In the Bahamas it is known from Abaco, Cat, New Providence, and Watling islands.

Grisebach's C. villosum var. pentandrum is often included in the synonymy of this taxon, but appears to be based on C. pentandrum Vent. and therefore belongs in the synonymy of that species instead. O. E. Schulz in Urb., Symb. Ant. 6: 63 (1909) cites a "Jacq., Ic. Pl. Rar., ed. 1, 4, pl. 82. 1781", but this plate in the ordinary 1781-1796 work represents a Dianthus sp. in the Caryophyllaceae. Through the kindness of Dr. Henri Humbert it has been ascertained that there was a "preparatory" edition of Jacquin's work sent to a select group of botanists and there is a copy of this preserved in the Bibliothèque Nationale de Paris "sous la cote 5.977". Plate 82 in this work is definitely our plant and the volume is dated 1781.

My reduction of the previously cited specimens of C. broadwayi and of C. bahamense in its entirety to the present variety may meet with criticism, but I see no way of adequately separating these taxa. It is even possible that the Trinidad material here regarded as var. brittonii may only represent a phase of the present variety, but experience with other groups in this family and in other groups seems to lend support to the belief that the Trinidad form is worthy of special recognition. Of C. polystachyum no authentic material has as yet been available to me for examination, but the original description leaves little doubt of its position here.

In all, 340 herbarium specimens, including the types of most of the names involved, and 10 mounted photographs and 2 sheets of clippings have been examined.

Citations: FLORIDA: Dade Co.: Cabanis s.n. (B); Chrysler & Johnson 160 (Ru); C. C. Deam 60931 (Dm); Herb. Chapman s.n. [South Florida] (C); E. J. Palmer 27501 (Du-152327). Monroe Co.: Blodgett s.n. [Key West] (G, Ka, T); Chapman 24 (W-57463); Per-rine s.n. (T); Rugel 59 (C, E-119119, E-119120, F-119035, M, W-512618), s.n. (W-512657); Sargent s.n. [Key West, Apl. 7, 1886] (A, A), s.n. [Key West, Apl. 13, 1886] (A), s.n. [Key West, Nov. 18, 1886] (A), s.n. [Key West, Nov. 19, 1886] (A, A); Small & Mosier 5678 (N, S). BAHAMAS: Brace 20 (N), 188 (K), 1882 (F-185309, N); Britton & Brace 233 (B, B-photo, F-171690, G, K, K-photo, N, N-photo, S-photo, Z-photo); Britton & Millspaugh 5744 (D-532232, F-198545, N, W-845017), 5744bis (F-198546), 6142 (F-198881, N, N), 6142bis (F-198882); W. C. Coker 488 (N);

Collector undesigned s.n. (Bm); Dale s.n. [1730] (Bm); Degener 19051 (N); A. S. Hitchcock s.n. [Port Howe, XI.19.1890] (F—175145), s.n. [Nassau, XI.1890] (F—174800), s.n. [Nassau] (E—47501, F—228005), s.n. [Port Howe] (E—47500, F—228075); P. Wilson 7217 (F—221324, K, N), 7234 (F—221341, K, N). CUBA: Havana: C. F. Baker 5137, in part (B, Es, F—185735, N, Po—63507); Baker & Van Hermann 1958, in part (B, Po—63508); Ekman 297 (B, S); Moldenke & Moldenke 19895 (Es, Lg, N); Moldenke, Moldenke, León, & Acuffa 15261 (Es); Sagra 7 (Dc), s.n. [Herb. Philad. 480] (B), s.n. [Herb. Philad. 481] (B), s.n. (Cb). Las Villas: Combs 468 (B, E—119094, F—17083, F—165115, F—358267, G, Io—1799, K, Ka—61425, N); R. A. Howard 4952 (N, N); Howard, Briggs, Kamb, Lane, & Ritland 374 (N); Roig 5743 (Es); Shafer 12196 (E—119079, N, W—699677). Oriente: N. L. Britton 1991 (N); Britton, Britton, & Cowell 12461 (B, F—325025, N, Ut, W—698455); Chrysogone 2703 (Ha); Clément 89 (Ha), 115 (Ha, N), 2857 (Ha, N), 2932 (Ha, N), 3092 (Ha, N), 5136 (N), 6569 (N); Crosby & Matthews 20 [9177] (Y, Y); Eggers 5344 (A, B, K, P, S, Vu, W—1323193); Ekman 380 (B, S, S), 3424 (S), 3576 (B, S), 7732 (N, S); Hioram s.n. [Abril 18, 1918] (Sc), s.n. [Guantanamo, Apr. 1918] (Se—14919); León 21279 (Ha, N); Victorin, Clément, & Alain 21564bis (Z). JAMAICA: Dancer s.n. (Cb); Herb. Fischer s.n. [1825] (L); Swartz s.n. (S, S). HISPANIOLA: Dominican Republic: Balbis s.n. [S. Domingo] (B); Bertero 607 (B), s.n. [S. D.] (E—119096); Eggers 2389b (B); Ehrenberg s.n. [Santo Domingo] (B, B); Ekman H.13025 (B, Ca—608042, Mi, S, W—1557853); Herb. Ventenat s.n. [St. Domingue] (Cb); Howard & Howard 8730 (S), 12068 (N); Mayerhoff 162 (B), s.n. [3. VIII.1856] (B), s.n. [1859] (B); Mus. Paris s.n. [1830] (B); Ranckiaer 862 (Cp), 878 (B, Cp), 1126 (Cp); L. C. Richard s.n. (P); Valeur 112 (A, Cb, Cb, Cp, E—984425, F—715069, N, S, W—1444-587), 662 (A, Cb, Cb, Cp, E—1026250, F—721400, I, K, K, La, Mi, N, N, S, S). Haiti: Christ 1909 (B), 1911 (B), 1981 (B); Cook, Scofield, & Doyle 89 (W—794328); Désert 52n (Y); Ekman H.934 (B, S), H.1372 (B, S, S, W—1410128); Herb. Lamarck s.n. (P); Holdridge 1428 (N, N); E. C. Leonard 4991 (B, G, N, W—1077559); Leonard & Leonard 11819 (W—1450701); Nash 991 (F—185302, N); Picarda 531 (B); Poiteau s.n. [St. Domingue] (P); Poiteau & Turpin s.n. [St. Domingo] (L). PUERTO RICO: Britton, Britton, & Brown 5838 (N, N, W—1145321); Britton & Cowell 1382 (N, W—847183); Goll 695 (W—409238); Riédlé s.n. [Porto Rico] (P); F. L. Stevens 2387 (N); Underwood & Griggs 487 (N, W—405431). CULEBRAS: Britton & Wheeler 34 (F—201171, N, W—655817). VIRGIN ISLANDS: St. Croix: Herb. Univ. Christian. s.n. (Ol). St. John: Breutel s.n. [Emans] (Le); Britton & Shafer 249 (N, W—756261); Morrow 170 (W—

1411030); Warming 187 (Cp, W—1234904). St. Thomas: Baudin 216 [Herb. Jussieu 5089] (P); Bertero s.n. (Dc); Børgesen 44b (Us); Eggers 26, in part [Herb. Prager 20401/2261] (B, B, B, Br, Cb, Cb, Cb, Ew, Ew, Gg—31064, K, Le, Le, Mu—1412, P, Us, V—104673, Vu, W—1177972, X), 90, in part (Cp, F—111695, Mu—3729), 122 (G, L), s.n. (L); Ehrenberg 198 (B); Friedrichsthal 167 (V), 316 (V); Herb. Engler s.n. (B); Ledru 177 [Herb. Jussieu 5090] (P, P); Ravn s.n. (B); Read s.n. (D, D); L. C. Richard s.n. (P); Riédlé s.n. [St. Thomas] (P, P, P, P, P). Tortola: Britton & Shaffer 914 (F—407902, K, N, W—756701); Fishlock 198 (A, G, K, N). Virgin Gorda: Fishlock 73 (N), 218 (G). LEeward ISLANDS: St. Bartholomew: Forsström s.n. [St. Bartholomew] (S, S, S, S, S, S, Us); Goës s.n. (B, S, S, Us); Haagum s.n. (S); Questel 287 (N). WINDWARD ISLANDS: Martinique: Herb. Ventenat s.n. (Cb, Cb). St. Vincent: Collector undesignated s.n. [1824] (G). WEST INDIES: Island undesignated: Bertero 290 (B); Boos s.n. (V); Forsström s.n. (S, S); Herb. Hohm. s.n. (Cp); Herb. Le Monnier s.n. (Cb); Herb. Reichenbach f. s.n. (V—160131); Moritz 75 (B); Mus. Bot. Berol. s.n. (B); Nuttall s.n. (D); L. C. Richard s.n. [ex India occidentali] (Cb); Swartz s.n. (S, S, S). CULTIVATED: Austria: Cult. Bot. Vindob. 867 (V); N. J. Jacquin s.n. [Hort. Vindob.] (B—photo of isotype, Bm—type, K—photo of isotype, N—photo of isotype, S—photo of isotype, V—isotype, Z—photo of isotype). California: Jack s.n. [Brandegees' garden, San Diego] (A); R. Moran 2773 (N). Denmark: Herb. Mus. Bot. Lund s.n. [h. Hafn.] (Lu), s.n. [cult. h. Hafn.] (Lu). France: Collector undesignated s.n. [Trianon] (Dc, Dc); Herb. Hort. Bot. Paris s.n. (Cb); Herb. Jard. de Paris s.n. [1828] (Dc); Ventenat s.n. [Hort. Paris] (Cp, V—285034). Germany: Herb. Kummer s.n. (Mu—1368, Mu—1372, Mu—1373, Mu—1608); Herb. Schwägrichen s.n. (Mu—1466); Hort. Bot. Berol. 32 (B); Otto s.n. [Hort. Bot. Berol., July 1838] (B). Italy: Herb. Harvey s.n. [h. R. P. 1843] (Du—166409), s.n. [H. R. P. 1844] (Du—166412). Missouri: Herb. Missouri Bot. Gard. s.n. [8/24/91] (E—119077), s.n. [9/26/95] (E—119078). LOCALITY OF COLLECTION UNDESIGNATED: Collector undesignated s.n. (Dc); Glaziov s.n. [mixed with no. 4929; Brazil?] (N); "Legit Anonymus ante annum 1840" s.n. (Ut). MOUNTED CLIPPINGS: O. E. Schulz in Urb., Symb. Ant. 6: 63. 1909 (B, B).

CITHAREXYLUM FULGIDUM Moldenke in Fedde, Repert. 37: 223—224. 1934.

Literature: Moldenke in Fedde, Repert. 37: 223—224. 1934; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Cit. 2: 347 & 419

(1948) and 3: 695, 900, & 901. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 29 & 179. 1949; Moldenke, *Phytologia* 3: 375. 1950.

Shrub, to 3 m. tall; branchlets and twigs rather slender, acutely or obtusely tetragonal, glabrous, the young shoots blackening in drying; nodes annulate; principal internodes 2.2—4.1 cm. long; leaf-scars borne on ascending sterigmata 1—2 mm. in length; leaves decussate-opposite; petioles stout, 6—9 mm. long, revolute-margined and conspicuously canaliculate above, glabrous; leaf-blades rather thick-chartaceous or subcoriaceous, very dark-green on both surfaces, especially above, very nitid and lustrous on both surfaces, especially above, narrowly elliptic or oblong, 4.7—8.8 cm. long, 1.8—2.8 cm. wide, shortly and rather bluntly acuminate at the apex, entire, acute or cuneate into the margined petiole at the base, bearing a pair of inconspicuous elongate glands at the very base, perfectly glabrous on both surfaces; midrib slender, sharply prominent above, prominent beneath; secondaries slender, 6—9 pairs, issuing at an angle of about 70° or 80° from the midrib, running almost straight toward the margins, arcuately anastomosing only at their termination and forming a conspicuous many-arched collective vein several mm. from the margins, prominent on both surfaces; vein and veinlet reticulation sparse, prominent on both surfaces; racemes terminal and terminating numerous short axillary twigs, erect or mutant, 7—9 cm. long, 1—1.3 cm. wide, many-flowered, unbranched; peduncles very slender, 1.5—2 cm. long, glabrous; rachis very slender, glabrous; pedicels filiform, 2—3 mm. long, glabrous; bracts none; bractlets few, linear, to 5 mm. long, or absent; prophylla linear, 1—2 mm. long; calyx obconic, about 2.6 mm. long and 1.8 mm. wide, minutely pulverulent, 5-costate, the rim very shortly 5-apiculate; corolla pale-violet, hypocrateriform, its tube about 3.3 mm. long, straight, about 0.7 mm. wide at the base and to 1.9 mm. wide at the apex, puberulent externally toward the apex, densely pilose within at the throat, the limb 5-parted, the lobes oblong-lingulate, about 1.3 mm. long and 1 mm. wide, rounded at the apex, pubescent within; stamens 4, didynamous, included, 2 inserted about 1.3 mm. and the other 2 about 1 mm. below the mouth of the corolla-tube; filaments about 0.5 mm. long; anthers oblong, about 0.7 mm. long and 0.4 mm. wide, dorsifixed; staminode obsolete; pistil included; style about 1.3 mm. long, glabrous; stigma very shortly 2-lobed, the lobes about 0.3 mm. long; ovary subglobose, about 0.7 mm. long and wide, glabrous; fruit red to black.

The type of this species was collected by Christian Julius Wilhelm Schiede (no. 83) near La Joya, San Luis Potosí, Mexico, on June 29th of a year before 1839, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is said by the collector to be rare at the type locality. The type collection is referred to as "Schiede & Deppe 83" by Macbride on the labels of his photograph of an isotype. The species has been erroneously included in C. lucidum Schlecht. & Cham. and the type collection has even been considered to be a cotype

of that species. It has also been confused in herbaria with C. caudatum L. It has been collected along roadsides in pine woods at an altitude of 2000 meters, fruiting in October. In all, 12 herbarium specimens, including the type, and 10 mounted photographs have been examined.

Citations: MEXICO: Hidalgo: H. E. Moore 5308 (N). San Luis Potosí: Schiede 83 [Macbride photos 34317] (B—photo of type, E—119053—isotype, F—976255—photo of isotype, F—976400—isotype, K—photo of type, Kr—photo of isotype, L—isotype, L—isotype, L—isotype, N—type, N—photo of type, N—photo of isotype, N—photo of isotype, P—isotype, S—photo of type, V—285035—isotype, Z—photo of type, Z—photo of isotype); Schiede & Deppe s. n. [La Joya] (Bm, Cb). Veracruz: Schiede 2128, in part (S).

CITHAREXYLUM GLABRUM (S. Wats.) Greenm., Proc. Amer. Acad. 32: 300—301. 1897.

Synonymy: Gonzalea glabra S. Wats., Proc. Amer. Acad. 25: 152. 1890.

Literature: S. Wats., Proc. Amer. Acad. 25: 152. 1890; Greenm., Proc. Amer. Acad. 32: 300—301. 1897; Durand & Jacks., Ind. Kew. Suppl. 1: 187. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 43. 1904; Junell, Symb. Bot. Upsal. 4: 46—47, pl. 2, fig. 2. 1934; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Alph. List Invalid Names 58. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Cit. 1: 162, 301, & 306. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 10. 1947; Moldenke, Alph. List Cit. 2: 437, 499, & 543 (1948), 3: 829 & 831 (1949), and 4: 1020 & 1057. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949.

Illustrations: Junell, Symb. Bot. Upsal. 3: pl. 2, fig. 2. 1934.

Shrub or tree, to 7 m. tall; branchlets and twigs medium or slender, subterete, many-ribbed, straw-colored or brown, glabrous, not blackening in drying; nodes annulate; principal internodes 4-6.2 cm. long; leaf-scars borne on very short and usually not conspicuous sterigmata about 1 mm. in length; petioles slender, 1.3-2 cm. long, glabrous, the upper 1/3 margined with two, very narrow, erect, wing-like continuations of the leaf-margins, forming a shallow trough, these wing-like margins becoming confluent at about 2/3 the length of the petiole so that the lower 2/3 of the petiole is neither winged nor canaliculate; leaf-blades chartaceous, rather dark- or light-green above, lighter beneath, dull or subnitid, narrowly oblong or oblong-lanceolate, 3.5-11 cm. long, 1.1-3 cm. wide, sharply (or rarely bluntly) acute or acuminate at the apex, entire, subacute at the base and abruptly prolonged into the petiole, bearing 1 or 2 pairs of small brownish glands on this prolongation, perfectly glabrous on both surfaces; midrib slender, plane above, prominent beneath; secondaries very slender, 9-11 pairs, close together, issuing at an angle of about 45° or 50° from the midrib, arcuate, plainly or obscurely anastomosing along the very margins, not prominent above; vein and veinlet

reticulation abundant, delicate, plainly visible on both surfaces although not prominent on either surface; racemes numerous, axillary and terminal, mostly axillary, erect or nutant, often compound with 1-3 pairs of branches almost as long as the central raceme which is 5.5-13 cm. long and 1-1.5 cm. wide, densely many-flowered; peduncles slender, 0.7-3.3 cm. long, glabrous, often with 1, 2, or 3 nodes, each bearing a pair of caducous bracts; rachis slender, glabrous; pedicels filiform, to 1 mm. long and jointed just below the flowers, or obsolete; bracts subfoliaceous, narrowly lanceolate or linear, often falcate, to 2.5 cm. long and 0.5 cm. wide, stipitate, glabrous; bractlets linear or absent; prophylla setaceous, less than 1 mm. long; flowers fragrant; calyx about 2 mm. long, 5-nerved, somewhat 5-angled, the rim subtruncate and ciliate; corolla white or creamy-white to pinkish, tubular, about 5 mm. long, the tube broad, glabrous externally below, puberulent above, pubescent in the throat, the lobes oblong or rounded, broad, pubescent on both surfaces; style glabrous; fruiting-calyx and fruit not known.

The type of this species was collected by Cyrus Guernsey Pringle (no. 2442) in the mountains near Lake Chapala, Jalisco, Mexico, on December 16, 1889, and is deposited in the United States National Herbarium at Washington. It is described by the collector as a tree 20 feet tall, and has been found also along rivers and at altitudes to 1400 meters, blooming in November and December.

It has in the past been confused in herbaria with C. donnell-smithii Greenm. It is closely related to C. fulgidum Moldenke, but the latter differs in the following respects: (1) its tetragonal branchlets and twigs, (2) its young shoots, peduncles, and entire inflorescence, including the rachis, pedicels, calyx, and corolla nigrescent in drying, whereas in C. glabrum all these parts are very light-gray and stramineous when dry, (3) its lack of axillary racemes and its sparser and always unbranched inflorescences, (4) its shorter petioles which are stouter and are winged and canaliculate all the way to the base, (5) its much more lustrous and more regularly bluntly short-acuminate leaf-blades, (6) its midrib, secondaries, and veinlets being prominent above, especially the midrib, which is very sharply so, (7) its secondaries issuing at greater angles with the midrib, being straighter, and forming a very conspicuous many-arched collective vein several mm. within the margins, (8) its sparse veinlet reticulation, (9) its much longer pedicels, and (10) its smaller flowers.

In all, 26 herbarium specimens, including the type, and 7 mounted photographs have been examined.

Citations: MEXICO: Guerrero: Hinton 14825 (Au, N). Jalisco: Diquet s.n. [Jalisco] (F-185310, N); Pringle 2442 (B-isotype, B-photo of type, Bm-isotype, C-isotype, Ca-104985-isotype, Ca-139567-isotype, D-isotype, F-105006-isotype, G-isotype, K-isotype, K-photo of type, Me-isotype, Mu-3991-isotype, N-isotype, N-photo of type, S-isotype, S-photo of type, Us-

isotype, Vt—isotype, W—49886—type, W—1323198—isotype, Z—photo of type), 5240 (B, Ed, Le, Me, N—photo, Z—photo), s.n. [Col. Maderas Expos. Chicago 51] (Me).

CITHAREXYLUM GLAZIOVII Moldenke in Fedde, Repert. 37: 224—225. 1934.

Literature: Glaz., Bull. Soc. Bot. France Mém. 3: 546. 1911; Moldenke in Fedde, Repert. 37: 224—225. 1934; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 25. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 36 & 88. 1942; Moldenke, Alph. List Cit. 1: 237. 1946; Moldenke, Phytologia 2: 385 & 387. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 61. 1948; Moldenke, Alph. List Cit. 2: 337 (1948), 3: 694 (1949), and 4: 1046. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76, 157, & 179. 1949; Moldenke, Phytologia 3: 286. 1950.

Large or small tree or shrub; branches subterete, gray, glabrous; branchlets obtusely or acutely tetragonal, very light-gray, sparsely furfuraceous-puberulent or glabrate; young shoots very slender, tetragonal, light-brown in drying, densely puberulent or very short-pubescent; nodes rather inconspicuously annulate; principal internodes 1—3.5 cm. long; leaf-scars subsessile on young shoots, borne on more or less prominent sterigmata on older wood; leaves decussate-opposite or rarely subopposite on young shoots; petioles slender, 8—13 mm. long, obscurely sulcate above, densely brownish-puberulent; leaf-blades chartaceous, dark-green on both surfaces, dull, varying from oblong or elliptic to subobovate (or the stunted leaves sometimes ovate), 5.6—14.5 cm. long, 2.1—6.5 cm. wide, acute or very shortly sharp-acuminate at the apex, entire, acute or subcuneate at the base, bearing a pair of obscure plangs close to the midrib at the very base, densely and uniformly short-puberulent-punctate above, becoming glabrous, densely puberulent or very short-pubescent with light-brown hairs beneath; midrib slender, sharply prominulent above, prominent beneath; secondaries very slender, 4—7 pairs, ascending, often only the uppermost ones arcuate, the lower almost straight, usually sharply prominulent on both surfaces; vein and veinlet reticulation fine, abundant, more or less prominulent, especially above, mostly obscured by the pubescence beneath; racemes terminal and terminating abbreviated axillary twigs, simple, mutant, 8.5—17 cm. long, to 2 cm. wide, rather loosely many-flowered; peduncles slender, mostly abbreviated to about 1.5 cm., densely short-pubescent like the twigs; rachis slender, densely short-pubescent; pedicels obsolete or less than 1 mm. long; bracts occasional and leaf-like; bractlets linear-spatulate, to 8 mm. long and 2.5 mm. wide, often found all through the inflorescence, often absent; prophylla linear, 1—3 mm. long, short-pubescent; flowers fragrant; calyx tubular, slightly zygomorphic, about 4.1 mm. long and 2.3 mm. wide, puberulent, its rim irregularly bilabiate, one sinus about 0.5 mm. and the other about 1.3 mm. deep, one lip 2-apiculate, the other lip 3-apiculate; corolla hypocrateriform, white, its tube cylindric, straight, about 7.8 mm. long, about 1 mm. wide at the base, ampliate to about 1.9 mm. at the apex, ex-

ternally glabrous, densely pilose in the throat within, the limb 5-parted, the lobes unequal, spatulate-lingulate, about 3.3 mm. long, about 1.4 mm. wide near the apex, rounded at the apex; stamens 4, distinctly didynamous, included, 2 inserted about 2.6 mm. and the other 2 about 4.1 mm. below the mouth of the corollatube; filaments of the upper stamens about 1 mm. long, of the lower ones about 1.5 mm. long; anthers oblong, about 1.8 mm. long and 0.5 mm. wide; pistil included; style about 1.4 mm. long, glabrous; stigma not ampliate, very shortly 2-lobed, the lobes about 0.5 mm. long; ovary ovate, about 1 mm. long and wide, glabrous; fruiting-calyx shallowly cupuliform, greatly indurated, to 6 mm. long and 11 mm. wide, glabrous, not at all ribbed nor striate, its rim deeply 5-lobed with broadly triangular and often irregular lobes; fruit large, oblong, about 16 mm. long and 11 mm. wide, glabrous, apparently not very fleshy, splitting at the apex, subnitid.

The type of this species was collected by Auguste François Marie Glaziou (no. 13058) — in whose honor it is named — in woods between Rio Sitio and Barbacena, Minas Gerais, Brazil, on January 22, 1880, and is deposited in the herbarium of the Universitetets Botaniske Museum at Copenhagen. Apparently the flowers are shed very easily in this species, as one may see from the fact that in many specimens the long racemes have flowers only at their very tips, while the pedicels and prophylla which carried or subtended many more flowers remain beneath them on the rachis.

The species has been confused in the past with C. myrianthum Cham., which, indeed, it closely resembles, and is so cited by Glaziou in the work listed above. The Glaziou 9989, which he cites, is actually true C. myrianthum. The species has also been confused by herbarium workers with C. quadrangulare Jacq. [= C. spinosum L.]. It is worth noting that Glaziou 11328, cited by him as C. quadrangulare, has conspicuously heavier calyxes and corollas and the flowers have all remained attached to the very base of the rachis. Glaziou 13059 represents fruiting material. Some of its original printed labels read "Rio de Janeiro", but the longhand inscription on the label in the Paris herbarium plainly states "Minas", and Glaziou, in his published report on his collections, cites this number from Minas Gerais and says that it blossoms in January and February. The labels on some specimens of the type collection have been inscribed "13085" through what was undoubtedly an error in transcription. The record of this species from Rio de Janeiro, as given by me in my earlier publications, was based on a plant cultivated there and is, therefore, not a valid record.

The irregularly split or even labiate calyx of this species during anthesis is noteworthy. The plant is apparently closely related to C. laetum Hiern and to C. krukovii Moldenke. In all, 23 herbarium specimens, including the type, and 8 mounted photographs have been examined.

Citations: BRAZIL: Ceará: Ducke 2115 (N). Minas Gerais: Glaz-

iou 13058 [Macbride photos 28394] (B--isotype, B--photo of type, Br--isotype, Cb--isotype, Cb--isotype, Cp--type, F--830275--photo of isotype, G--isotype, K--isotype, K--isotype, K--photo of type, Kr--photo of isotype, L--isotype, N--isotype, N--photo of isotype, N--photo of type, P--isotype, P--isotype, S--photo of type, W--1110398--isotype, Z--photo of type), 13059 (B, Bz--18718, Cb, Cb, K, L, P, P). CULTIVATED: Brazil: Glaziou 11328 (Cp, K, P).

CITHAREXYLUM GLEASONIANUM Moldenke in Fedde, Repert. 37: 225--226. 1934.

Literature: Moldenke in Fedde, Repert. 37: 225--226. 1934; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 13 & 36. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16, 71, & 88. 1942; Moldenke, Alph. List Cit. 1: 314 (1946) and 2: 422, 435, 500, 562, & 607. 1948; H. N. & A. L. Moldenke, Fl. Life 2: 61. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29, 157, & 179. 1949; Moldenke, Alph. List Cit. 3: 834 & 835 (1949) and 4: 1028. 1949.

Shrub, to 5 m. tall; trunk 4--5 cm. in diameter; bark incanous; branches and branchlets slender, acutely and sharply tetragonal, light- or dark-gray, twiggy, the young shoots brownish and very minutely puberulent-strigillose, older wood glabrate; pith slender; nodes annulate; principal internodes 7--33 mm. long, usually much abbreviated; leaf-scars borne on short but comparatively stout and prominent sterigmata which are often quite conspicuous; leaves decussate-opposite, numerous on the young shoots only; petioles slender, often more or less purplish, 4--13 mm. long, glabrous or subglabrate, somewhat canaliculate above; leaf-blades chartaceous, bright-green above, much lighter beneath, not discoloring in drying, dull, ovate-elliptic or oblong-elliptic, 3.2--7.3 cm. long, 1.6--3.2 cm. wide, acute or short-acuminate at the apex, entire or sometimes rather irregularly repand-undulate along the margins, rounded at the base but very shortly prolonged into the petiole, bearing 1 or 2 obscure brown glandular disks on the prolongation or not glanduliferous, glabrous on both surfaces or very minutely and sparsely puberulous-strigillose when immature, densely punctate beneath; midrib very slender, plane above, prominent beneath; secondaries very slender, 5--7 pairs, arcuate-ascending, plane above, prominent beneath, not anastomosing or very faintly so; vein and veinlet reticulation abundant, very fine, usually almost indiscernible above, not at all prominent beneath; racemes terminal and terminating short axillary twigs, simple, erect or nutant, abbreviated, 4--7 cm. long, 1.3--1.8 cm. wide, many-flowered; peduncles slender, abbreviated, about 1 cm. long, glabrate, usually with one node bearing a pair of bractlets; rachis slender, glabrate; pedicels slender, about 1 mm. long, glabrate, elongate to 3 mm. in fruit; bracts none; bractlets linear, to 3 mm. long; prophylla setaceous, about 1 mm. long; calyx obconic, about 2.8 mm. long and 1.8 mm. wide, plainly 5-costate, minutely puberulent, its rim very shortly 5-dentate; corolla hypocrateriform, the tube about 3.6 mm. long, straight, about 0.7 mm. wide at the base, ampliate to 2 mm. at the apex, externally

glabrate, densely pilose in the throat within, the limb 5-parted, the lobes subequal, ovate, about 1 mm. long and 0.7 mm. wide, rounded or subacute at the apex; fertile stamens 4, didynamous, included, 2 inserted about 1 mm. and the other 2 about 1.3 mm. below the mouth of the corolla-tube; filaments about 0.7 mm. long; anthers ovate or sagittate, about 0.7 mm. long and 0.5 mm. wide; staminode filiform, about 0.5 mm. long; pistil included; style about 1 mm. long, glabrous; stigma very shortly bilobed, the lobes about 0.5 mm. long; ovary pyriform, about 1.3 mm. long, about 1 mm. wide at the apex, glabrous, apparently 2-celled; fruiting-calyx shallowly campanulate, light and herbaceous, becoming more indurated in age, 2--3 mm. long, about 5 mm. wide, very minutely puberulous or glabrate, its rim subtruncate or obscurely 5-angulate-dentate; fruit blue-black, subglobose or oblong, about 6 mm. long and 5 mm. wide, fleshy, nitid, glabrous, 2-lobed.

The type of this species was collected by Carl Albert Purpus (no. 5829) at Boca del Monte, Puebla, Mexico, in May of 1912, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis. It is named in honor of Henry Allan Gleason, who first pointed out to me its distinctness from C. affine D. Don, with which it had hitherto been confused by collectors and herbarium workers.

The leaf-blades, on being pressed in botanical driers, often take on a more or less falcate shape toward the apex with the 2 halves pressing asymmetrically both at apex and at the base. It has been collected in anthesis in May and July, and in fruit in January. Sharp found it growing at an altitude of 7800 feet.

In all, 20 herbarium specimens, including the type, and 7 mounted photographs have been examined. The specimen from Darmstadt, Germany, cited below, was grown from seed sent by C. A. Purpus in 1904 from Ixtaccihuatl, Puebla, Mexico.

Citations: MEXICO: Puebla: Purpus 5829 (B--photo of type, Bm-isotype, Ca--164178--isotype, E--704913--type, F--386443--isotype, G--isotype, K--photo of type, N--isotype, N--photo of type, S--photo of type, W--464455--isotype, Z--photo of type), s.n. [9 Juli '24] (A). Vera Cruz: Kerber 258 (B, B, Bm, Br, Cp, K, L, Mu--1737, N--photo, Us, X, Z--photo); A. J. Sharp 44668 (N). CULTIVATED: Germany: Herb. Bot. Gard. Darmstadt s.n. [1927] (A).

CITHAREXYLUM HERRERAE Mansf., Notizbl. Bot. Gart. Berlin 9: 469. 1925.

Synonymy: Citharexylon herreræ Mansf. ex Moldenke, Suppl. List Invalid Names 2, in syn. 1941.

Literature: Mansf., Notizbl. Bot. Gart. Berlin 9: 469. 1925; Hill, Ind. Kew. Suppl. 7: 50. 1929; Herrera, Revist. Chil. Hist. Nat. 34: 25--30, pl. 2. 1930; Herrera, Estud. Fl. Cuzco 160--161. 1930; Moldenke, Alph. List Common Names 15. 1939; Moldenke, Geogr. Distrib. Avicenn. 23. 1939; Herrera, Sinop. Fl. Cuzco 1: 353. 1941; Moldenke, Suppl. List Invalid Names 2. 1941; Worsdell, Ind. Lond. Suppl. 1: 233. 1941; Moldenke, Known Geogr. Distrib.

Verbenac., [ed. 1], 34 & 88. 1942; Moldenke, *Alph. List Invalid Names* 13. 1942; Moldenke, *Phytologia* 2: 96. 1944; *Bol. Mus. Hist. Nat. Javier Prado* 9: 166. 1945; Moldenke, *Alph. List Cit.* 1: 122, 230, 319, & 321 (1946) and 2: 328, 339, 349, 423, & 431. 1948; H. N. & A. L. Moldenke, *Pl. Life* 2: 44 & 64. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 71 & 179. 1949; Moldenke, *Alph. List Cit.* 3: 690, 807, 872, & 951 (1949) and 4: 1035, 1037, & 1060. 1949; Moldenke, *Phytologia* 4: 69. 1952.

Illustrations: Herrera, *Estud. Fl. Guzco* 160—161. 1930; Herrera, *Revist. Chil. Hist. Nat.* 34: 27—28, pl. 2. 1930.

Shrub or tree, to 5 m. tall; branches and branchlets stout, medullose, acutely tetragonal, conspicuously decussately 4-margined or 4-winged, the wings always lying in one plane (as the margins are whenever they occur in this genus), remaining green for some years, light or eventually brown in drying, glabrous, shiny; twigs slender, numerous, acutely tetragonal and 4-margined like the branches, green when fresh, light-brown in drying, medullose, glabrous, shiny, the uppermost ones modified into spike-like thorns which become increasingly larger as the branchlet grows, eventually producing 1 to several nodes and internodes and bearing leaves and axillary racemes and secondary thorns at the nodes although still spike-like at the apex, in such cases secondary-axillary branchlets usually also armed but not terminating in a spike-like thorn arise between the former and the leaf-sterigmata; nodes annulate; principal internodes 1.5—5.5 cm. long; leaf-scars borne on rather large, ascending, corky sterigmata which are to 3 mm. long; leaves decussate-opposite, numerous; petioles slender, 1—3 mm. long, glabrous, flat above; leaf-blades chartaceous, dark-green above, lighter beneath, narrowly oblong or lanceolate, 1—2.5 cm. long, 3—9 mm. wide, varying from rounded to submarginate or acute at the apex, entire or sharply serrate to below the middle or almost to the base, acute or subcuneate at the base, glabrous on both surfaces, densely glandular-impressed-punctate beneath, apparently not glanduliferous at the base; midrib and the 4—6 pairs of secondaries very slender, plane above, slightly prominent beneath, not conspicuous; vein and veinlet reticulation obscure; racemes axillary, abundant, abbreviated, 1—2.5 cm. long, about 1 cm. wide, few- or submany-flowered, mostly borne in pairs at each upper node; peduncles slender, to 7 mm. long, glabrate; rachis slender, glabrate; pedicels obsolete during anthesis or to 1 mm. long, incrassate and to 2 mm. long in fruit; bracts and bractlets absent; prophylla setaceous, minute; calyx about 3.5 mm. long, glabrous, its rim shortly 5-dentate; corolla greenish-yellow, hypocrateriform, about 5 mm. long, pilose in the throat, the limb 5-parted, the lobes about 1 mm. long, externally scattered-pilose, plainly pilose within; stamens 4, inserted at about the middle of the corolla-tube, included; filaments about 1 mm. long; anthers about 1.5 mm. long, the thecae slightly divergent at the base; style about 2 mm. long, included; stigma subbilobed; fruiting-calyx subpatelliform, indurated, to 6 mm. wide, glabrous, more or less 5-ribbed, subentire or irregularly 5-lobed; fruit large, oblong or

globose, to 11 mm. long, 8—9.5 mm. wide, fleshy, much wrinkled and 2-lobed in drying, very shiny, red when fresh, composed of 2 pyrenes, each pyrene 2-locular.

The type of this distinctive species was collected by Fortunato Luciano Herrera y Garmendia (no. 677) — in whose honor it is named — in the mountains of Saxahuamán, province of Cercado, in the district of San Sebastián, at an altitude of 3200—3400 meters, Cuzco, Peru, in May of 1925, and is deposited in the herbarium of the Botanisches Museum at Berlin. The species has been found at altitudes of 2900 to 4000 meters, inhabiting rocky slopes of canyons. Its margined branches, branchlets, and twigs, which apparently remain green for a number of years, together with its spike-like thorns and small glabrous leaves and racemes render its identification easy. It has been collected in anthesis in January, February, April, and May, and in fruit in April, May, and from July to September. The common name "haururu" is recorded for it by Herrera, who also says "Sus ramas fructíferas de un hermoso color rojo se emplean en la ornamentación de los nacimientos. Cultivable como planta de adorno." In all, 29 herbarium specimens, including the type, and 11 mounted photographs and clippings have been examined.

Citations: PERU: Apurimac: Vargas 8753 (N), 9137 (N). Cuzco: Cook & Gilbert 1888 (E—794722, E—photo, W—703621); Ferreyra 9856 (Z); C. Gay s.n. [Cuzco] (F—998841, G, P, P); Herrera 677 [Macbride photos 17595] (B—type, B—isotype, B—isotype, B—isotype, F—663024—photo of 2 isotypes, K—photo of type, Kr—photo of 2 isotypes, N—isotype, N—photo of type, N—photo of 2 isotypes, S—photo of type, Z—photo of type), 1164a (F—589538, N, N—photo, W—1283241, Z—photo), 2705 (B), s.n. (W—clippings & photos); F. W. Pennell 13606 (D—636132, F—557993, G, N, W—1340626); Rose & Rose 19031 (N, W—761622); Soukup 322 (F—853771). Department undetermined: C. Gay 1939 (P); Pearce s.n. (K).

CITHAREXYLUM HEXANGULARE Greenm., Field Columb. Mus. Publ. Bot. 2: 187—188. 1907.

Synonymy: Citharexylum affine Mart. & Gal., Bull. Acad. Roy. Brux. 11 (2): 328. 1844 [not C. affine D. Don, 1831]. Citharexylum reticulatum Donn. Sm. apud Greenm., Field Columb. Mus. Publ. Bot. 2: 188, in syn. 1907 [not C. reticulatum H.B.K., 1817, nor Cham., 1909]. Citharexylum affine Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 15, in syn. 1940. Citharexylum fastigiatum Standl. & L. Wms., in herb.

Literature: Mart. & Gal., Bull. Acad. Roy. Brux. 11 (2): 328. 1844; Jacks., Ind. Kew. 1: 549. 1893; Donn. Sm., Enum. Pl. Guatem. 6: 34. 1903; Greenm., Field Columb. Mus. Publ. Bot. 2: 187—188. 1907; Prain, Ind. Kew. Suppl. 3: 43. 1908; Moldenke, Alph. List Common Names 7 & 24. 1939; Moldenke, Geogr. Distrib. Avicenn. 13, 15—17, & 36. 1939; Moldenke, Prelim. Alph. List In-

valid Names 15 & 16. 1940; Moldenke, Carnegie Inst. Wash. Publ. 522: 190—191. 1940; Lundell, Contrib. Univ. Mich. Herb. 8: 61. 1942; Moldenke, Alph. List Invalid Names 13 & 14. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16, 19—22, 71, & 88. 1942; Moldenke, Phytologia 2: 96. 1944; Moldenke, Alph. List Cit. 1: 135, 178, 218, 252, 314, & 320 (1946), 2: 331, 332, 334, 343, 350, 419, 422, 437, 500, 503, 566, 587, 588, 601, & 604 (1948), 3: 677—679, 709, 714, 715, 725, 802, 877, 892, 902, & 948 (1949), and 4: 1013, 1026, 1028, 1045, 1057, 1061, 1077, 1095, 1119, 1131, & 1247. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29, 35—39, 157, & 179. 1949.

Shrub or small tree, to 12 m. tall; trunk to 15 cm. in diameter; branches medium or slender, acutely or obtusely tetragonal, gray, glabrate; branchlets and twigs slender, acutely and sharply tetragonal, very minutely puberulous, becoming glabrous, brown, often decidedly ribbed; nodes annulate; principal internodes 1—4.5 cm. long; leaf-scars borne on prominent ascending sterigmata to 5 mm. long; leaves decussate-opposite (or approximate on young shoots), occasionally ternate; petioles very slender, 0.6—1.9 cm. long, minutely puberulous or glabrate, deeply canaliculate above; leaf-blades chartaceous, uniformly green or gray-green on both surfaces, dull, lanceolate or lanceolate-oblong to elliptic, 4—16.2 cm. long, 1.1—5.5 cm. wide, bluntly acute or acuminate at the apex, entire, acute or acuminate at the base and prolonged into the petiole, usually bearing a pair of large elongated glands on the prolongation beneath, very minutely and obscurely puberulous on both surfaces, becoming glabrate; midrib very slender, sharply prominent above, prominent beneath; secondaries very slender, 6—8 pairs, ascending, hardly at all arcuate, prominent on both surfaces; vein and veinlet reticulation very abundant, fine, prominent above, this prominence of the venation imparting to the upper leaf-surface a decided roughness; racemes axillary or terminating short twigs, simple or compound, with 2—10 opposite or whorled branches, erect, densely many-flowered, the main raceme 10—31 cm. long and to 1 cm. wide, the lateral ones 4.5—12 cm. long; peduncles slender, 1.5—5.5 cm. long, brown, minutely puberulous, occasionally with 1 or 2 nodes, acutely tetragonal; rachis very slender, brown, minutely puberulous; pedicels filiform, about 1 mm. long, puberulous; bracts absent; bractlets linear or subulate, minute or to 14 mm. long, equaling or slightly exceeding the pedicels, persistent; prophylla linear, 1—2 mm. long; flowers fragrant; calyx tubular-campanulate, about 3.5 mm. long, 5-toothed, 5-nerved and with intermediate smaller subanastomosing veins, glabrate except for the ciliate rim; corolla white, tubular-campanulate, 5—6 mm. long, pubescent on both surfaces, its tube slightly surpassing the calyx, the lobes somewhat unequal, ovate-rotund to broadly oblong, 2—3 mm. long, nearly or quite as broad, spreading or reflexed; perfect stamens 4, the fifth reduced to a mere staminode, included; style pubescent; ovary glabrous; fruiting-calyx cupuliform, about 4 mm. long and wide, striate-ribbed, glabrous or subglabrate, its rim shallowly

and often irregularly dentate or erose; immature fruit oblong, to 6 mm. long and 4 mm. wide, glabrous, yellow when fresh, turning red or reddish-brown and finally black when mature, 2-lobed, apiculate when immature.

The type of this distinctive species was collected by Hans von Turckheim (no. 7765 — his original field number was II.192) at Cubilquitz, at an altitude of 350 meters, Alta Verapaz, Guatemala, in November of 1900 (not September, 1901, as stated on the labels) and is deposited in the Gray Herbarium of Harvard University. The type of C. affine Mart. & Gal. was collected by Henri Guillaume Galeotti (no. 7097) in the woods of Antigua, near Vera Cruz, Mexico.

The usually grayish-green and uniform color of the leaves and their roughened consistency on the upper surface due to the prominence of the entire venation, the acutely tetragonal branchlets, twigs, and peduncles, and the usually compound racemes distinguish this species well. The branchlets, twigs, and young shoots are often decidedly ribbed. The Turckheim II.192 at Stockholm is dated "September, 1904", but may actually still be a part of the type collection and therefore an isotype.

The species is said to inhabit riversides, banks, and flooded plains, dunes, low second growth, limestone rocks, open mountain forests, and low banks, at altitudes from 50 to 665 meters. It has been collected in anthesis from June to December and in April. The E. P. Johnson 80 collection is inscribed "Yucatán & Tabasco", so may actually have come from either state. The collector states that the species grows by rivers, is a bush or tree resembling a willow (Salix) in growth, and "blooms when very small; mostly grows as a shrub". It is described by Lundell as a treelet 5--12 meters tall, while Williams says it is an "herb 1 foot 6 inches tall, among logs above stream, not common". Schipp, on the other hand, found it to be "very common on riverbank in open places."

Lundell & Lundell 7679 is rather anomalous in having especially short leaf-blades, decidedly lanceolate in shape, but similar leaves are often seen on typical branches. The collection is described as having been taken from a shrub only 3--5 feet tall in low second growth. Typical specimens have very much longer and more oblong-lanceolate or even elliptic leaf-blades. The Rovirosa 248 and 248bis specimens at Kew, at the Philadelphia Academy of Science, and in the Columbia University herbarium are most remarkable in consisting of two large leafy shoots and 4 racemiferous shoots. The leaves are regularly ternate on all except one of the leafy shoots, and on these ternate-leaved shoots the stems are 5-angled and 5-margined instead of only 4-angled and 4-margined as on the opposite-leaved shoot and as is normal for the species. The racemiferous shoots have their racemes all simple, axillary, and uniformly ternate. The collections were made on the flooded plains of the Río San Sebastian in Tabasco, Mexico, on August 13, 1888.

The species is cultivated at Brisbane in Queensland. Mell reports the vernacular name "cajjalaco", and notes "so named be-

cause a bird of the same name is said to be fond of the bright red berries" [the plant, of course, does not produce berries; the fruits are drupes]. Other common names are "canahuite", "palomillo", and "pálmillo". It has been confused in the past with *C. affine* D. Don, *C. quadrangulare* Jacq. [= *C. spinosum* L.], *C. reticulatum* H.B.K., and *Clerodendrum* sp. The Cufodontis collection at Vienna bears printed labels reading "Cufodonti". In all, 103 herbarium specimens, including the types of all the names involved, and 5 mounted photographs have been examined.

Citations: MEXICO: Campeche: Matuda 3861 (F-1027199, Mh, N). Chiapas: Juzepczuk 1369 (G), 1869 (F-689271, L). Jalisco: Karwinski 707 (L). Oaxaca: Martínez-Calderón 88 (W-1809139); L. C. Smith 632 (G). Quintana Roo: Lundell & Lundell 7679 (Mi, Mi, N). San Luis Potosí: Vines 3307 (F-1024917), 3330 (W-1483172). Tabasco: E. P. Johnson 80 (C, K); Matuda 3562 (Du-299381, F-1026377, Mh, N); Rovirosa 248 (C, D, K), 248bis (D). Vera Cruz: Galeotti 7097 (Br, Cb, P), s.n. (K); Hahn s.n. [Juin '66] (P); Karwinski 708 (L); Liebmann 11362 (Cp, F-689260); Mell s.n. [Cazones] (N); Purpus 5922 (B, Bm, Ca-166346, E-705066, E-705175, Ed, F-386498, G, G, L, L, N, N, P, S, W-464508, W-464510); LL. Williams 8636 (F-897041, N). State undetermined: Karwinski s.n. [1841, 1842] (L). GUATEMALA: Alta Verapaz: H. V. Johnson 527 (F-707766, La, W-1081420); Türkheim 7765 [II.192; Hort. Thenensis I.4196] (A-isotype, B-isotype, B-photo of type, Br-isotype, C-isotype, E-119052-isotype, Ed-isotype, F-575757-isotype, G-type, K-isotype, K-photo of type, Mu-3972-isotype, N-photo of type, S-isotype, S-photo of type, W-398330-isotype, W-1323208-isotype, W-1323209-isotype, W-1323210-isotype, Z-photo of type). BRITISH HONDURAS: C. L. Lundell 6969 (Au, F-894324, I, M1, M1, N), 7022 (M1); Peck 567 (B, G); Sampson 14 (K, K); Schipp 1190 (Bm, Ca-519163, Cb, E-1048249, F-683597, K, M1, N, N, S). HONDURAS: Cortés: J. B. Edwards P.660 (A, B, Ca-522676, F-688143, S, W-1588595). NICARAGUA: Cabo Gracias á Dios: Schramm 35 (W-1406449). Segovia: Schramm s.n. [200 miles up the Wanks River] (F-717697). COSTA RICA: Limón: Shank & Molina R. 4263 (W-2085188). Puntarenas: Cufodontis 176 (V). CULTIVATED: Queensland: C. T. White 2457 (A).

CITHAREXYLUM HIDALGENSE Moldenke, Geogr. Distrib. Avicenn. 13, nom. nud. (1939), Phytologia 1: 414-415. 1940.

Literature: Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Phytologia 1: 414-415. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Cit. 1: 183, 272, & 306. 1946; Salisb., Ind. Kew. Suppl. 10: 53. 1947; Moldenke, Alph. List Cit. 2: 419, 437, 447, 459, & 499 (1948), 3: 679, 763, 830, 891, & 900 (1949), and 4: 1028 & 1049. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949.

Shrub or small tree, to 7 m. tall; branches and branchlets medium, gray, obtusely tetragonal, short-hirsute or furfuraceous at the apex, soon becoming glabrescent, lenticellate; twigs slender, nigrescent in drying, sparsely short-hirsute; nodes obscurely annulate; principal internodes 1--3.5 cm. long; leaves decussate-opposite; leaf-scars large, borne on extremely large and massive, divergent-ascending, corky sterigmata to 5 mm. long; petioles slender, 1.5--3.3 cm. long, more or less hirsute; leaf-blades membranous, brunneous or nigrescent above in drying, lighter beneath, oblong-elliptic or elliptic to subobovate, 5.2--11 cm. long, 2--7.7 cm. wide, acute or short-acuminate at the apex, asymmetrically angulate near the apex or entire, acute or subacuminate and often more or less asymmetric at the base, usually bearing 1 or 2 black glands at the very base, shortly hirsute-pubescent above, becoming merely densely puberulent in age, densely hirsute (especially along the larger venation) beneath; midrib slender, not prominent on either surface; secondaries very slender, 5--8 pairs, arcuate-ascending, not prominent on either surface, conspicuous beneath only because of their more or less distichous pubescence; vein and veinlet reticulation obscure or indiscernible; racemes axillary or terminal, mutant, 8--16 cm. long, about 2 cm. wide during anthesis, simple, many-flowered; peduncles and rachis slender, more or less hirsute-pubescent, brown, the former 5--7 mm. long; pedicels filiform, about 2.5 mm. long, short-pubescent; bracts and bractlets none; prophylla linear-setaceous, about 1 mm. long; corolla white or lavender; fruiting-calyx light, cupuliform, about 4 mm. long and 8 mm. wide, 5-ribbed, minutely puberulent or glabrescent, its rim shallowly 5-angulate or subentire; fruit oblong, red or red-black, about 10 mm. long and 7 mm. wide, fleshy, glabrous, nitid, wrinkled and nigrescent in drying.

The type of this species was collected by Cyrus Guernsey Pringle (no. 8969) in barrancas below the Trinidad Iron Works, at an altitude of 5000 feet, in Hidalgo, Mexico, on April 22, 1904, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is obviously very closely related to C. sessaei D. Don, with which it has been confused in herbaria. Specimens have also been misidentified in herbaria as C. ovatifolium Greenm. and C. solanaceum Cham. Its hirsute-velutinous pubescence and nigrescent leaves are quite characteristic. The finest specimens are preserved in the herbarium of the Botanisches Museum at Berlin. Collector have found it by cornfields, on mountainsides in wet Liquidambar forests, on limestone ledges, and in streamside thickets, from 1665 to 2000 meters altitude, blooming in April and October, and in fruit in June and November. The Ehrenberg collection cited below may not actually have come from Vera Cruz, as its label merely states "Minas". In all, 50 herbarium specimens, including the type, and 2 mounted photographs have been examined.

Citations: MEXICO: Hidalgo: Coulter 1173 (K, K); H. E. Moore 2631 (N); Pringle 8969 (A--isotype, B--isotype, Bm--isotype, Ca--139932--isotype, Cb--isotype, Cm--isotype, Cp--isotype, D--522688

— isotype, E—119064— isotype, Ed— isotype, Ed— isotype, F—178638— isotype, G— isotype, Gg—31075— isotype, Gg—155407— isotype, It— isotype, K— isotype, L— isotype, Le— isotype, Me— isotype, Me— isotype, Me— isotype, N— type, N— photo of isotype, Na—26035— isotype, Ol— isotype, P— isotype, P— isotype, V—4738— isotype, Vt— isotype, W—461145— isotype, X— isotype, X— isotype, Z— photo of isotype). Michoacán: Hinton 15606 (N). Puebla: C. L. Lundell 12642 (Ld); F. Salazar s.n. [Zacapoxtla] (Me, W—1169844). Vera Cruz: Ehrenberg s.n. [Minas] (B, B, B); Liebmann 11190 (Cp), 15487 (Cp), 15488 (Cp). Zacatecas: Schiede 570 (B, B, B, B).

CITHAREXYLUM HINTONI Moldenke in Fedde, Repert. 37: 226—227. 1934.

Literature: Moldenke in Fedde, Repert. 37: 226—227. 1934; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Alph. List Common Names 8. 1939; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Phytologia 2: 96. 1944; H. N. & A. L. Moldenke, Pl. Life 2: 64. 1948; Moldenke, Alph. List Cit. 2: 341, 540, & 541. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949.

Weak leaning shrub or vine, 3—4 m. tall; branches and branchlets very stout, decidedly tetragonal, extremely sharply 4-angled or even 4-margined, chestnut-brown, densely pubescent; nodes pronouncedly annulate; leaves decussate-opposite; petioles stoutish, 0.7—3.7 cm. long, densely brown-pubescent; sterigmata often large and ascending-prominent; leaf-blades firmly chartaceous, ovate, 5.5—12.5 cm. long, 4—8 cm. wide, acute at the apex, entire, acuminate at the base, lightly pubescent above, densely velutinous-pubescent beneath; midrib stout, very prominent beneath; secondaries slender, about 9 pairs, ascending, practically straight, arcuate-anastomosing toward the margins; racemes axillary and terminal, usually terminating short axillary twigs, erect or mutant, 5—28 cm. long, 1—2 cm. wide, many-flowered; peduncles and rachis densely grayish-pubescent; pedicels slender, very short during anthesis, elongated to 1.5 mm. in fruit, densely pubescent; calyx tubular, light, about 3.9 mm. long and 2 mm. wide, slightly contracted above the ovary, minutely puberulous, not conspicuously 5-costate, the rim very shortly 5-dentate; corolla infundibular, the tube cylindric, about 5.9 mm. long, glabrate externally, densely pilose within, the limb 5-parted, the lobes hyaline, obovate, about 2.6 mm. long and wide, rounded and somewhat irregularly crisped at the apex; fertile stamens 4, didynamous, included, 2 inserted about 2.6 mm. and the other 2 about 1.8 mm. below the mouth of the corolla-tube; filaments about 1 mm. long, more or less flattened; anthers ovate, about 0.9 mm. long and 0.7 mm. wide; staminode inserted about 3 mm. below the mouth of the corolla-tube, about 0.5 mm. long; pistil included; style rather thick, about 2.3 mm. long, glabrous; stigma very shortly bilobed, the lobes more or less

fimbriate; ovary oblong-obovate, about 1 mm. long and wide, glabrous, distinctly 5-lobed, indistinctly 4-celled; fruiting-calyx light, campanulate, spreading, about 4 mm. long and 5 mm. wide, short-pubescent, its rim subtruncate; fruit oblong, about 7 mm. long and 4 mm. wide, black, glabrous.

The type of this species was collected by George B. Hinton (no. 3399) — in whose honor it is named — by the river at Bejuco, at an altitude of 610 meters, in the district of Temascaltepec, state of México, Mexico, on February 16, 1933, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. Hinton 3209, which is a fruiting specimen, collected on January 26 of the same year, is inaccurately called the type collection by Miranda.

The species has been found by collectors along the sides of rivers, in oak woods, in low sandy matorral, on the sides of arroyos, in wet places, and in high mixed woods, at altitudes of 700 to 2500 meters, blooming from February through April, in fruit in January, April, and May. A vernacular name recorded for it is "chichalaco". Birds are said to be fond of the fruit. It is closely related to C. ovalifolium Greem. The dried flowers are remarkable for their persistent violet color, a color which is often exhibited also by the upper 1/3 of the calyx. In all, 24 herbarium specimens, including the type, and 10 mounted photographs have been examined.

Citations: MEXICO: México: T. Coulter 1173 (Ch); Hinton 3209 (E—photo, K, Me, N—photo, S—photo, W—photo, Z—photo), 3399 (E—photo of type, K—type, N—isotype, N—photo of type, S—photo of type, W—photo of type, Z—photo of type), 7514 (Au, F—875865, K, Me, N, N), 7534 (F—875875, K, N, N, N), 7661 (F—875848, K, N, N); Matuda & al. 30356 (Ss), 30536 (Ss), 30671 (Z), 30890 (Ss).

CITHAREXYLUM HIRTELLUM Standl., Field Mus. Publ. Bot. 4: 257. 1929.

Literature: Standl., Field Mus. Publ. Bot. 4: 257 (1929) and 10: 335. 1931; Hill, Ind. Kew. Suppl. 8: 53. 1933; Moldenke, Alph. List Common Names 26. 1939; Moldenke, Geogr. Distrib. Avicenn. 15 & 16. 1939; Moldenke, Carnegie Inst. Wash. Publ. 522: 191—192. 1940; Moldenke in Woodson & Schery, Ann. Mo. Bot. Gard. 28: 464. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 20, 21, 23, & 88. 1942; Moldenke, Phytologia 2: 96. 1944; Moldenke, Alph. List Cit. 1: 231, 232, & 320. 1946; Moldenke, Phytologia 2: 331. 1947; Moldenke, Alph. List Cit. 2: 331, 460, 603, & 614 (1948), 3: 677, 960, & 974 (1949), and 4: 1061, 1066, & 1111. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 35—37, 40, & 179. 1949.

Shrub or tree, to 7 m. tall; stems 4—5 cm. in diameter; branches and branchlets medium or slender, acutely tetragonal, finely hirtellous with brown hairs; twigs very slender, brown, finely or densely hirtellous; nodes annulate; principal internodes 2—5.8 cm. long; leaf-scars borne on ascending sterigmata

which on older wood become quite stout and corky and to 3 mm. long; leaves decussate-opposite; petioles slender or stoutish, 5-7 mm. long, densely hirtellous, canaliculate above; leaf-blades firmly chartaceous, rich-green above, somewhat lighter or pale gray-green beneath, subnitid or shiny (especially above), elliptic or subrotund, 5-9 cm. long, 1.1-6 cm. wide, acute or acuminate at the apex, entire, cuneate or subacuminate at the base, with a pair of elongate glands at the very base, finely hirtellous above when immature, becoming subglabrate, persistently densely hirtellous beneath; midrib very slender, plane or more or less prominent above, prominent beneath; secondaries very slender, 4-6 pairs, ascending, more or less arcuate, inconspicuously anastomosing, varying from obscure to prominent above, prominent beneath; vein and veinlet reticulation varying from obscure to prominent on both surfaces; racemes axillary and terminal, erect, simple, 6-14 cm. long, to 1.5 cm. wide, many-flowered; peduncles slender, 1-5 cm. long, densely hirtellous like the twigs; rachis slender, densely hirtellous; pedicels filiform, to 1 mm. long, hirtellous; bracts usually absent; bractlets linear, to 7 mm. long, puberulent; prophylla linear-subulate, 1-2 mm. long; flowers sweet-scented; calyx cylindrical-campanulate, green, 4.5-5 mm. long, subacute at the base, sparsely hirtellous, its rim remotely denticulate; corolla white, about 7 mm. long, its tube scarcely longer than the calyx, glabrous, the lobes rounded, spreading, sparsely and minutely puberulent; fruiting-calyx broadly campanulate, heavy, pale-green, 6-7 mm. long and wide, glabrous, its rim 5-lobed, the lobes broad and rounded; fruit elliptic, dull orange-green when immature, later orange or red, 8-10 mm. long, about 6 mm. wide, fleshy.

The type of this species was collected by John Sidney Karling (no. 9) in the vicinity of Tower Hill, British Honduras, in 1928, and is deposited in the herbarium of the Chicago Natural History Museum. The species has been found in acacual, pasture lands, and on high ridges, at altitudes of 50 to 1500 meters, in flower in February, May, June, and December, and in fruit in July, August, and December. Standley describes it as a shrub only 3 feet tall. Gentle says that the "berries" [actually drupes] are red, and Steyermark describes the leaves as "firmly membranous". It was confused with *C. caudatum* L. by Standley. It is obviously closely related to *C. hexangulare* Greenm., which differs in its mostly glabrous or subglabrate branches, branchlets, twigs, and leaves, in its larger leaves, and in its larger, more abundant, and often compound racemes. The Steyermark 41818 collection cited below does not appear to be typical. In all, 46 herbarium specimens, including the type, and 5 mounted photographs have been examined.

Citations: GUATEMALA: Izabal: Steyermark 41816 (N), 41818 (Id, N), 41825 (N). BRITISH HONDURAS: Gentle 106 (F-696360), 238 (Au, M1, N, S), 435 (F-702163, I, K, La, M1, N, S), 1177 (A, E-1075886, F-733459, G, I, K, M1, N, N), 4922 (N), s.n. [C. L. Lundell 4922] (A, Ba, D-722661, E-1043726, F-683521,

I, La, Mi, N, S); Karling 9 (B—photo of type, F—579931—type, K—iso-type, K—photo of type, N—photo of type, S—photo of type, W—1490851—iso-type, Z—photo of type); Kinloch 2 (F—580344, Y). HONDURAS: Atlántida: P. C. Standley 55697 (A, F—581347, N, W—1408897). PANAMA: Chiriquí: Woodson & Schery 755 (N).

XCITHAREXYLUM HYBRIDUM Moldenke, Geogr. Distrib. Avicenn. 12, nom. nud. (Sept. 20, 1939); Lilloa 4: 313. October 11, 1939.

Literature: Moldenke, Geogr. Distrib. Avicenn. 12. 1939; Moldenke, Lilloa 4: 313. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 29, 30, & 88 (1942) and [ed. 2], 56, 57, & 179. 1949; Moldenke in Cheesman, Fl. Trin. & Tob. 2 (6): 22—23. 1955.

This appears to be a natural hybrid between C. fruticosum L. and C. spinosum L., found where the ranges of the two species overlap. Its characters are more or less intermediate between those of the typical forms of the two parents. The typical forms of both parents are found abundantly in the Lesser Antilles and they do not seem to hybridize so freely there, but most of the glabrous Trinidad and Tobago material, as well as most of that from northern continental South America, seems to be more or less intermediate.

The type of the hybrid was collected by Walter Elias Broadway (no. 4064, in part) at Rockley Vale, Tobago, on July 21, 1910, and is deposited in the Britton Herbarium at the New York Botanical Garden. Some sheets of this number greatly resemble C. spinosum, while others, because of their short pedicels and other characters, seem closer to C. fruticosum. Other collections which appear to represent the hybrid are Broadway 955 and 6658, Eggers 5484, Sandwith 1821, and Smith & Smith 405. The Rehder 894, cited by me under C. fruticosum, greatly resembles the present hybrid, but was collected in Florida, where C. spinosum does not occur. Otero 681, from Puerto Rico, herein cited as C. spinosum, may also be this hybrid.

Sandwith reports that his collection was made on a coral cliff and that the plant was a shrub or small tree, with white flowers and pale-brownish-red fruit, flowering and fruiting in October. Broadway 6658 has long-stalked flowers and has in the past been regarded as more or less anomalous material of C. spinosum. The Edinburgh specimen of Smith & Smith 405 has dentate leaves. In all, 32 herbarium specimens, including the type, have been examined.

Citations: WINDWARD ISLANDS: Grenada: W. E. Broadway 955 (B, B, L). St. Vincent: Smith & Smith 405 (B, Ed, G). TOBAGO: W. E. Broadway 4064 (B—iso-type, Bm—iso-type, Cb—iso-type, Cb—iso-type, Cb—iso-type, Cb—iso-type, Cp—iso-type, F—376642—iso-type, G—iso-type, Gg—204757—iso-type, N—type, S—iso-type, Ut—iso-type), 6658 (Bm, E—972129, F—689807, I, K, Ms, Ms, W—1343499).

CITHAREXYLUM ILICIFOLIUM H.B.K., Nov. & Sp. Pl. 2: 256. 1817.

Synonymy: Citharexylon ilicifolium Humb. & Bonpl. ex Steud., Nom. Bot., ed. 1, 202. 1821. Citharexylon ilicifolium H.B.K. apud Spreng. in L., Syst. Veg., ed. 16, 2: 76. 1825. Duranta ilicifolia Willd. ex Walp., Repert. 4: 74, in syn. 1845. Citharexylon ilicifolium Hook., in herb. Cytherexylum ilicifolium H.B.K., in herb.

Literature: H.B.K., Nov. Gen. & Sp. Pl. 2: 256. 1817; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 764. 1825; Walp., Repert. 4: 74. 1845; Schau. in A. DC., Prodr. 11: 609. 1847; Agardh, Theor. Syst. Pl. pl. 22. 1858; Jacks., Ind. Kew. 1: 549. 1893; Rusby, Bull. Torrey Bot. Club 27: 81. 1900; L. H. Bailey, Man. Cult. Pl., pr. 1, 631 & 807 (1924) and pr. 2, 631 & 807. 1925; Stapf, Ind. Lond. 2: 220. 1930; Junell, Symb. Bot. Upsal. 4: 46-47 & 49, figs. 87 & 88. 1934; Dahlgren, Svensk. Bot. Tidsk. 32: 231. 1938; L. H. Bailey, Man. Cult. Pl., pr. 3, 631 & 807. 1938; Moldenke, Geogr. Distrib. Avicenn. 22, 23, 28, & 36. 1939; Moldenke, Prelim. List Invalid Names 25. 1940; L. H. Bailey, Man. Cult. Pl., pr. 4, 631 & 807. 1941; Moldenke, Alph. List Invalid Names 23. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 33, 34, 40, 71, & 88. 1942; L. H. Bailey, Man. Cult. Pl., pr. 5, 631 & 807. 1944; L. H. & E. Z. Bailey, Hortus 151. 1945; Moldenke, Alph. List Cit. 1: 10, 13, 28, 37, 50, 56, 128, 163, 202, 230, & 273 (1946) and 2: 328, 331, 347, 433, 447, 448, 556, 561, 562, 565, 573, 580, 603, & 642. 1948; Van Rensselaer, Trees Santa Barbara, rev. ed., 163. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 44. 1948; Moldenke, Alph. List Cit. 3: 667, 690, 758, 802, 805, 857, 903, 956, & 957 (1949) and 4: 979, 983, 1016, 1060, 1062, 1066, 1069, 1075, 1098, 1104, & 1253. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 69, 71, 96, 157, & 179. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 4. 1949; Espinosa, Est. Bot. Sur Ecuad. 2: 6. 1949; Moldenke, Journ. Calif. Hort. Soc. 15: 85. 1954; Moldenke, Mem. N. Y. Bot. Gard. 9: 176. 1955.

Illustrations: Agardh, Theor. Syst. Pl. pl. 22. 1858; Junell, Symb. Bot. Upsal. 4: figs. 87 & 88. 1934.

Large or slender straggling shrub or small tree, to 7 m. tall, with several stems from the base, few- or many-branched; trunk to 5 cm. in diameter at breast height; branches and branchlets rather slender, stiff, often twiggy, more or less acutely tetragonal, gray, minutely puberulous or glabrate; twigs slender, usually tetragonal, light-brown, hirtellous; nodes obscurely annulate; principal internodes abbreviated, 5-12 mm. long; leaf-scars borne on large, stout, ascending, corky sterigmata which are often as long as the diameter of the twig or may be shorter or longer; leaves numerous, decussate-opposite; petioles slender, often flattened, 2-5 mm. long, hirtellous or puberulent to glabrate; leaf-blades firmly chartaceous or subcoriaceous, uniformly bright-green on both surfaces when dry, rich-green with transparent veins or dark-green and somewhat lustrous above and lighter beneath when fresh, not discoloring in drying, shiny even when dry, oblong or elliptic, 1.8-7.2 cm. long, 0.8-4 cm.

wide, acute at the apex, entire or sharply serrate with rather few or many noticeably apiculate teeth, acute at the base, usually cuneately prolonged into the petiole, not glanduliferous at the base, glabrous on both surfaces, glandular-punctate (but not impressed-punctate) beneath, not punctate above; midrib very slender, mostly plane above, prominent beneath; secondaries numerous, short, 7--10 pairs, not very arcuate, prominent on both surfaces; vein and veinlet reticulation fine, abundant, prominent on both surfaces; racemes axillary or terminating very short axillary twigs, abbreviated, erect or nutant, simple, 1--4.5 cm. long, rather few-flowered; peduncles very slender, 5--10 mm. long, hirtellous or puberulent, often with 1 or 2 bractlet-bearing nodes; rachis very slender, hirtellous; pedicels filiform, to 1 mm. long, hardly elongate in fruit, hirtellous; bracts none; bractlets linear, 1--3 mm. long; prophylla setaceous, about 1 mm. long; flowers very fragrant; calyx subcampanulate, 5-striate, pentagonal, externally pubescent, its rim very shortly 5-dentate; corolla varying from white or whitish to dirty yellow or pale apricot-yellow, its tube subcylindric, slightly longer than the calyx, pilose in the throat, the limb 5-parted, about 6 mm. wide, spreading, the lobes equal, rounded at the apex, pilose within; stamens 4 or 5, equal, inserted at the top of the corolla-tube, slightly exserted; filaments very short; anthers sagittate, erect, 2-celled, longitudinally dehiscent; pollen gray; style half as long as the corolla-tube, glabrous; stigma capitate; ovary subglobose, glabrous; fruiting-calyx cupuliform, about 3 mm. long and 6 mm. wide, puberulent or hirtellous, its rim conspicuously 5-lobed, each lobe often subserrate or at least apiculate at the apex, spreading; fruit subglobose, dark cherry-red or eventually black or black-purple, about 6 mm. long and wide, fleshy, glabrous, 2-lobed, enclosed at the base by the persistent fruiting-calyx, composed of 2 pyrenes, which are 2-celled, each cell 1-seeded; seeds oblong.

The species was based by Kunth on several collections made by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland, or by Bonpland alone, near Quito, Chillo, Riobamba, and Penipe, at altitudes of 7800--9000 feet, in Ecuador [or Chile, according to Walpers, undoubtedly in error]. Its immature leaf-blades are membranous, but the mature ones are always very firm and stiff or even subcoriaceous. The very immature ones blacken in drying, but the mature ones usually do not. Seedlings (vid. specimen in the Arnold Arboretum herbarium, collected by Judd) have leaves much like those of Rhacoma ilicifolia (Poir.) Trelease. Mature leaves vary from entire to sharply serrate, often on the same twig. Frequently mature ones have much the texture and appearance of those of Ilex opaca Ait. It is said to be a very abundant shrub about the village of Azogues in the Andes of Ecuador, where it has been collected frequently by botanists and where it is employed for making fences. A drawing by Jameson in the Kew herbarium indicates the fruit as 2-locular, each locule containing 2 erect seeds. This drawing also shows an abnormal flower with 2 styles, one of which has a bifid stigma.

The species is also very common about Quito, Ofña, and Cuenca, in Ecuador.

The leaves are mostly small, 1.8—4.2 cm. long and 8—25 mm. wide; larger ones are exceptional (vid. Spruce 5008 at Kew). Spruce says "some trees have entire, others toothed leaves, but I see no other difference". Espinosa says that it is a shrub with numerous stiff branches, forming a part of the matorral, often in association with Duranta triacantha A. L. Juss. and species of Baccharis and Passiflora. It has been found by collectors in woods at high altitudes, in the interandine highlands, along the borders of trails and roads, in the chaparro and in hedgerows, at lakesides, in loam soil on the lower slopes of mountains that have been mostly cleared, in pastures cut by deep ravines, and on dry flats alongside of rivers and on nearby low bluffs, at altitudes of 2460 to 3665 meters, blooming from November to January, March, April, and June to August, and in fruit in February, June to August, November, and December. Common names are "casanta", "sharcáu", and "zitac". The gynoeceum morphology is discussed by Junell in the reference cited above, and phases of the cytology are discussed by Dahlgren.

The species has been confused by herbarium workers with C. reticulatum H.B.K., Ilex scopulorum Humb. & Bonpl., and Jacquinia sp. Balls states that the flowers are "in loose blunt spikes 1 1/2 inches long, very sweet-scented; leaves small, white below; and that the plants are "loose straggling shrubs and very small trees, to 10 feet tall, growing on dry banks in sandy soil and on edges of woods, etc." His herbarium material, however, does not show the leaves as white below. Penland & Summers erroneously refer to the fruit as "berries". Van Rensselaer reports the tree cultivated at Santa Barbara, California, and Reynolds, Schroeder, & McClintock at West Los Angeles. The Lehman 6592 collection cited below may actually have come from Cañar, since its label merely states "between Cuenca and Azogues". The labels on the Macbride photograph, cited below, are misleading; they are inscribed "Chile", while the photograph of the label on the actual specimen indicates that the collection was made at "Quito". My own notes indicate that the collection was made at Chillo, which is probably the basis for the "Chile" on the longhand labels. In all, 127 herbarium specimens, including the types of all the names involved, and 14 mounted photographs have been examined.

Citations: ECUADOR: Azuay: Camp E.422 (N), E.1793 (N), E.1873 (N), E.2030 (N); Giler 6 (W--2106671); Harling 690 (S); Jameson s.n. [Ofña] (K); Lehmann 6592 (B, F--578237, K, N); Penland & Summers 1069 (N). Cañar: Fosberg & Giler 22662 (N, N); Jameson s.n. [Azogues] (G); Prieto P.165 (N). Chimborazo: Asplund 5945 (S); Bonpland 3195 (N--photo of cotype, P--cotype, P--cotype, Z--photo of cotype), s.n. [Río Chambo] (E--photo of cotype, N--photo of cotype, P--cotype, S--photo of cotype, W--photo of cotype, Z--photo of cotype); Rimbach 142 (F--684698, N, N, Y--

23892), 515 (S); Spruce s.n. [Punta de Quinia] (K). Pichincha: André 3702 (F--533748, K, N), K.1551 (K, V); Balls 5787 (W--1777706); Benoist 2378 (P, P), 3796 (P), s.n. (P); Bonpland s.n. [Quito] (F--976535--cotype, P--cotype, P--cotype); Couthouy s.n. [1855] (D--611788, G, Os, T); Espinosa 2433 (N); Fagerlind & Wibom 2000b (S); Firmin 258 (A, F--615621, W--1420222), 290 (F--615753, W--1344984); Hall 82 (K); Herb. Bernhardt s.n. [Quito] (B); Herb. Humboldt s.n. [Chillo; Macbride photos 17593] (F--663022--photo of cotype, Kr--photo of cotype, N--photo of cotype); Holmgren 951 (S); Humboldt & Bonpland s.n. [Quito] (B--cotype, B--cotype, K--photo of cotype, N--photo of cotype, S--photo of cotype, Z--photo of cotype); Jameson 178 (K, La), 314 (Bm, Cb, Ed, K, K, P), s.n. [environs of Quito & Cuenca] (V--166963); Karsten s.n. [Quito] (L, V, V--124269); Little 6105 [Herb. U. S. Dept. Agr. Forest Serv. 96742] (It, N); Moldenke & Moldenke 19787 (F, Fy, Mg, Mr, N, No, Ot, S, Ss); Mutis 1645 [160] (W--1561462); Sodiolo 257 (B, B); Spruce 5225 (Bm, Cb, K, K, N, V--166930, V--285036, X); H. Sydow 21 (Mh); M. Wagner s.n. (Mu--1115); Weydahl 227 (S). Tunguragua: Spruce 5008 (Bm, Cb, Ed, K, K, L, V--166934, V--285039, X). Province undetermined: Rimbach 228 [Interandine highlands] (W--1484629), 282 [Interandine highlands] (F--766432, N). PERU: Department undetermined: Dombey 252 (P), s.n. (P); C. Gay 1339 (P), s.n. [1839--1840] (P). BOLIVIA: La Paz: Pearce s.n. [Pelechuco] (K). CULTIVATED: California: W. Bradbury s.n. [Santa Barbara] (Ba); Eastwood s.n. [Montecito, Nov. 8, 1923] (Gg--31069), s.n. [Montecito, April 1926] (Gg--140721); Reynolds, Schroeder, & McClintock 186 (La); Waltham 374 (A, N), s.n. [Montecito, Sept. 1919] (Gg--31070), s.n. [Santa Barbara, Oct. 1923] (Gg--31068). Ecuador: Ewan 16413 (W--2106153). England: Herb. Hort. Kew s.n. [July 1861] (K, K); Herb. Mus. Bot. Lund s.n. [Hort. Kew 1854] (Lu). Germany: Herb. Hort. Bot. Berol. s.n. [1899] (B); Schlechter s.n. [Hort. Bot. Dahlem] (B); Strauss s.n. [Hort. Dahlem, 3.8.1909] (B), s.n. [Hort. Dahlem, 9.6.1910] (B).

CITHAREXYLUM INTEGERRIMUM (Kuntze) Moldenke, Phytologia 1: 17. 1933.

Synonymy: Citharexylum villosum var. integerrimum Kuntze, Rev. Gen. Pl. 2: 504. 1891. Citharexylum villosum var. integerrimum Kuntze apud Standl., Field Mus. Publ. Bot. 18: 1000-1001. 1938.

Literature: Kuntze, Rev. Gen. Pl. 2: 504. 1891; Moldenke, Phytologia 1: 17. 1933; Standl., Field Mus. Publ. Bot. 18: 1000-1001. 1938; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 17. 1939; Moldenke, Prelim. Alph. List Invalid Names 16. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed.

1], 22 & 88. 1942; Moldenke, Alph. List Invalid Names 13 & 58. 1942; Moldenke, Alph. List Cit. 1: 58. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 5. 1947; Moldenke, Alph. List Cit. 2: 340 & 625. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 39 & 179. 1949.

Shrub or tree, to 3 m. tall; branches, branchlets, and twigs slender, acutely tetragonal, light-brown, minutely puberulent, becoming glabrate in age; nodes annulate; principal internodes 1.7—4 cm. long; leaf-scars borne on very short sterigmata, not conspicuous; leaves decussate-opposite; petioles slender, 3—8 mm. long, subglabrate; leaf-blades chartaceous, dark-green above, lighter beneath, dull, oblong or elliptic to ovate, 4.7—7.5 cm. long, 1.9—3 cm. wide, bluntly acute or short-acuminate at the apex, entire, abruptly contracted and subcuneate-decurrent into the petiole at the acute base, obscurely and minutely puberulous above and rather densely hirtellous with light-brownish or stramineous hairs beneath, or eventually glabrous; midrib slender, plane or subprominent above, prominent beneath; secondaries very slender, distant, 4—6 pairs, arcuate-ascending, not at all anastomosing, more or less prominulous on both surfaces; vein and veinlet reticulation abundant, more or less prominulous, especially above; racemes terminating the axillary twigs, paniculate, erect, 2—15 cm. long, slender, about 1 cm. wide, rather loosely many-flowered, simple; peduncles slender, 1.4—1.8 cm. long, rather densely puberulent; rachis slender, rather densely puberulent or minutely pilose; pedicels slender or filiform, 0.9—1.5 mm. long; bracts and bractlets absent; prophylla minute, linear-setaceous, obscure; calyx narrowly campanulate, about 2.5 mm. long, sparsely puberulent, the rim conspicuously dentate; corolla twice as long as the calyx, its lobes sparsely puberulent on the outside; fruiting-calyx and fruit not known.

The type of this species was collected by Carl Ernst Otto Kuntze (no. 2016) at an altitude of 100 feet in Costa Rica, in June, 1874, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is very closely related to C. hexangulare Greem. and C. hirtellum Standl. It has been collected in anthesis in May and June. The Brenes collection cited below was misidentified as C. viride Moldenke. In all, 2 herbarium specimens, including the type, and 5 mounted photographs have been examined.

Citations: COSTA RICA: Guanacaste: Brenes 15532 (F—857918). Province undetermined: Kuntze 2016 (B—photo of type, K—photo of type, N—type, N—photo of type, S—photo of type, Z—photo of type).

XCITHAREXYLUM JAMAICENSE Moldenke, hybr. nov.

Planta hybrida naturalis signis foliorum florumque C. caudatum L. et C. fruticosum L. intermediis.

A natural hybrid between C. caudatum and C. fruticosum, with foliar and inflorescence characters intermediate between those of the two parents.

The type of the hybrid was collected by Janet Russell Perkins (no. 419) on the island of Jamaica, and is deposited in the herbarium of the Botanisches Museum at Berlin. It is known thus far only from the type specimen.

Citations: JAMAICA: J. R. Perkins 419 (B-type).

CITHAREXYLUM JÖRGENSENII (Lillo) Moldenke, Geogr. Distrib. Avicenn. 29, ncm. nud. (1939); Revist. Sudam. Bot. 6: 178. 1940.

Synonymy: Duranta jörgensenii Lillo, Act. Prim. Reun. Nac. Soc. Argent. Cienc. Nat. 1916, 224. 1919. Duranta joergensenii Lillo apud Hill, Ind. Kew. Suppl. 7: 80. 1929. Citharexylum xenicum Moldenke, Lilloa 6: 317, in syn. 1941. Citharexylum joergensenii (Lillo) Moldenke apud Salieb., Ind. Kew. Suppl. 11: 55. 1953.

Literature: Lillo, Act. Prim. Reun. Nac. Soc. Argent. Cienc. Nat. 1916, 224. 1919; Hill, Ind. Kew. Suppl. 7: 80. 1929; Latzina, Trab. Inst. Bot. y Farm. 54: 78. 1935; Latzina, Lilloa 1: 188. 1937; Moldenke, Geogr. Distrib. Avicenn. 29. 1939; Moldenke, Revist. Sudam. Bot. 6: 178. 1940; Moldenke, Prelim. Alph. List Invalid Names 18 & 25. 1940; Moldenke, Lilloa 6: 317 (1941) and 8: 414. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 42 & 88. 1942; Moldenke, Alph. List Invalid Names 15 & 23. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 66. 1948; Moldenke, Alph. List Cit. 2: 347, 377, 598, & 599 (1948) and 3: 695, 746, & 912. 1949; Moldenke, Phytologia 3: 135. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 103 & 179. 1949; Salieb., Ind. Kew. Suppl. 11: 55. 1953.

Shrub or small tree, to 10 m. tall; wood white; branches and branchlets acutely tetragonal, decussately submargined, gray, glabrous; nodes annulate; principal internodes 2—3 cm. long; young twigs very slender, dark-chestnut, very short, glabrous; leaf-scars on the branches and branchlets heavy, very prominent, corky, 2—4 mm. long and wide, diverging at an angle of 85°—90°; leaves decussate-opposite, crowded on the young twigs; petioles very slender, 7—15 mm. long, submargined, glabrous; leaf-blades chartaceous, elliptic, 3.5—5.5 cm. long, 1.7—2.8 cm. wide, rounded or obtuse to subacute at the apex, distinctly serrate along the margins with about 4 teeth per cm., entire and cuneate at the base and attenuate into the petiole, glabrous above, glabrous but densely punctate beneath; midrib subimpressed above in drying, prominulous beneath; secondaries about 7 per side, somewhat indistinct above, prominulous and arcuate-ascending beneath, indistinctly anastomosing near the margins; vein and veinlet reticulation obscure above, slender and abundant beneath; racemes terminating abbreviated twigs, mutant, 2—3.3 cm. long, 5—8-flowered, in fruit about 1.4 cm. wide; calyx campanulate; corolla yellow to yellowish or pale-yellowish, about 1/3 longer than the calyx; fruiting pedicels 2—3 mm. long, glabrous, often reflexed; fruiting-calyx cupuliform, membranaceous, 2.5—3 mm. long, about 5 mm. wide, gla-

brous, obscurely 5-costate, spreading, the rim irregularly lobed or split or even several-parted; fruit green or rose, oblong, about 5 mm. long and 4 mm. wide, glabrous, wrinkled and 2-sulcate in drying, 2-seeded.

The type of this species was collected by Pedro Jørgensen (no. 47) -- in whose honor it is named -- in a subtropical woods at Estancia Las Pavas, Puesto, El Saladillo, dept. Chichigasta, Tucumán, Argentina, in December, 1916. The type of *C. xenicum* was collected by August Schuel (no. 197) at Laguna del Feson, Esquina Grande, dept. Chichigasta, Jujuy, Argentina, in 1913, and is deposited in the herbarium of the Naturhistorisches Museum at Vienna. The dried leaves are somewhat darker green above than beneath. It has been confused in herbaria with *Duranta serratifolia* (Griseb.) Kuntze, which has a tubular calyx and a blue corolla 4 times as long as the calyx. It has been collected in anthesis and fruit in December, and has been found at altitudes of 2100 meters. The name which must be adopted for this species is unfortunately very similar to that of *C. jurgenseni* Briq., named in honor of Jørgensen, a Mexican collector. Under the present edition of the International Rules of Nomenclature, however, the two names are different and distinct, differing by several important letters, and are both valid. In all, 8 herbarium specimens, including the types of all the names involved, and 9 mounted photographs have been examined.

Citations: ARGENTINA: Catamarca: *Jørgensen* 1735 [Herb. Osten 11011] (N, N, Ug). Jujuy: *Schuel* 197 [Macbride photos 34315] (F-976253--photo, Kr--photo, N, N--photo, N--photo, V, Z--photo). Tucumán: *Jørgensen* 35 (N), 47 [Herb. Osten 11480] (F--photo of isotype, N--photo of isotype, Sg--photo of isotype, Ug--isotype, Z--photo of isotype); *Monetti* 2189 [Herb. Inst. Miguel Lillo 32488] (Au).

CITHAREXYLUM JURGENSENI Briq., Bull. Herb. Boiss. 4: 342. 1896.

Synonymy: *Citharexylum longipes* Rose ex Moldenke, Prelim. Alph. List Invalid Names 16, in syn. 1940.

Literature: Briq., Bull. Herb. Boiss. 4: 342. 1896; Thiselet-Dyer, Ind. Kew. Suppl. 2: 43. 1904; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Prelim. Alph. List Invalid Names 16. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Invalid Names 14. 1942; Moldenke, Alph. List Cit. 1: 218 & 240 (1946) and 2: 334, 336, & 601. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 66. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Alph. List Cit. 3: 692, 788, & 873 (1949) and 4: 1024, 1025, 1031, & 1032. 1949.

Tree, to 6 m. tall; branches and branchlets rather stout, more or less acutely tetragonal and margined, brownish, medullose, glabrous; twigs more slender, very acutely and sharply tetragonal, brownish, glabrous; nodes very conspicuously annulate; principal internodes 1--3.3 cm. long; leaf-scars borne on

very short and more or less appressed sterigmata; leaves decussate-opposite, sometimes unequally paired or only one of a pair developed (in which case it is tremendously larger than the near-by leaves); petioles slender or stoutish, elongate, 2-7.5 cm. long on mature leaves, variable, glabrous, usually deeply canalliculate above; leaf-blades chartaceous, fragile, usually rather dull grayish-green on both surfaces, elliptic, 4.5-20 cm. long, 2-8.4 cm. wide, bluntly acute or short-acuminate (rarely emarginate, sometimes long-acuminate) at the apex, entire, abruptly acuminate at the base and more or less prolonged into the petiole, bearing 1 or 2 pairs of large elongate glands on the prolongation beneath, very obscurely pulverulent on both surfaces or glabrous; midrib stout, plane above, prominent beneath; secondaries slender, 5-7 pairs, arcuate-ascending, not very plainly anastomosing, prominent on both surfaces or (usually) more or less obscure above; vein and veinlet reticulation fine, abundant, slightly prominent on both surfaces or obscure above, often plane beneath; racemes axillary and terminal, elongate, erect or nutant, 13.5-34 cm. long, 1-2 cm. wide, mostly simple (or the terminal one sometimes with 2 short branches at the base), the axillary ones usually only one per node, the second member of the pair short and abortive, rather loosely many-flowered; peduncles slender, 1-3.3 cm. long, minutely puberulent, pulverulent, or glabrate, often with several bract-bearing or bractlet-bearing nodes; rachis slender, puberulent or pulverulent; pedicels about 2.5 mm. long, puberulent; bracts foliaceous, few, lanceolate; bractlets linear, spatulate, or narrowly lanceolate; prophylla linear-setaceous, 1-1.8 mm. long, subulate; calyx cylindric, 2-2.5 mm. long, rather fleshy, subglabrous, 5-nerved, its rim truncate, very minutely and regularly 5-denticulate or subsinuate, short-pilose with white hairs on the margin; corolla short-exserted, surpassing the calyx by about 5 mm., its tube cylindric, sometimes ampliate toward the apex, the limb expanded, spreading, 5-lobed, the lobes obovate, broad, crisped along the margins, very obtuse at the apex, venose, the upper ones about 1.5 mm. long, the lower ones sometimes larger and to 2 mm. long, the median one broader and emarginate; stamens included, inserted at the middle or at about 1/3 the height of the corolla-tube; filaments about 3 mm. long; anthers oblong, about 0.7 mm. long; style shorter than the stamens, about 3 mm. long, thickened at the apex, minutely bilobed, pilose beneath the apex; fruiting-calyx shallowly campanulate, expanded, indurated, 1-2 mm. long, about 5 mm. wide, 5-ribbed, minutely puberulent, its rim irregularly lobed or very broadly 5-angulate; fruit subglobose or oblong, 4-5 mm. long and wide, glabrous, fleshy, 2-lobed, black and wrinkled in drying, with 2 pyrenes, the pyrenes osseous, 2-locular.

The type of this species was collected by C. Jurgensen (no. 259) — in whose honor it is named — at Trapiche de la Concepcion, southwest of Oaxaca, in the state of Oaxaca, Mexico, in June, 1845, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. The printed labels

say "Juillet 1845", but a longhand inscription on an isotype at Geneva plainly states that the collection was made in "June".

The species is apparently very variable as to petiolar length and leaf-blade size. Immature leaves are very misleading, since they do not even hint at the tremendous elongation of petiole (and blade) which follows later. The annulate nodes are extremely conspicuous, as they are also in C. affine D. Don and C. pterocladum Donn. Sm., with the former of which herbarium material has been abundantly confused. Briquet states that it is related to C. caudatum "Sieb." and to C. quadrangulare Jacq. [= C. spinosum L.], but the relationship is obviously much closer to C. affine and C. pterocladum. It has been collected in anthesis in January, February, and June, and in fruit in February and June.

C. longipes is based on Edward Palmer 1839 from Nayarit, Mexico. The labels on Macbride's photograph no. 24623 are inscribed "Jurgens 259" through an error in transcription. The species is very close to C. affine, which is a very variable species. In all 19 herbarium specimens, including the types of all the names involved, and 10 mounted photographs have been examined.

Citations: MEXICO: Guerrero: Langlassé 927 (B). Nayarit: Edw. Palmer 1839 (Cp, F--707723, G, W--305273, W--567807), 2064 (W--305639). Oaxaca: Jurgensen 259 [Macbride photos 24623] (B--photo of cotype, Cb--type, Cb--isotype, F--695193--isotype, F--772027--photo of isotype, K--photo of isotype, Kr--photo of isotype, N--isotype, N--photo of isotype, N--photo of isotype, S--photo of isotype, Z--photo of isotype), 260 (K, N--photo, Z--photo). Sinaloa: Goldman 375 (Gg--228602, N, W--360296); Rose, Standley, & Russell 14905 (G, G, W--637781). State undetermined: Galeotti s. n. (V).

CITHAREXYLUM KARSTENI Moldenke in Fedde, Repert. 37: 227--228. 1934.

Literature: Moldenke in Fedde, Repert. 37: 227--228. 1934; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 19. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 88. 1942; Moldenke, Alph. List Cit. 1: 10, 169, 221, & 243 (1946) and 2: 337, 424, 603, & 643. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 66. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 59 & 179. 1949; Moldenke, Alph. List Cit. 3: 694, 758, 805, & 885 (1949) and 4: 1005, 1006, 1043, 1069, 1070, & 1078. 1949.

Large shrub or tree, to 6 m. tall; branches and branchlets slender, obtusely or acutely tetragonal, gray or brown, more or less hirtellous-puberulent or glabrous, often striate-ribbed; twigs and young shoots slender, acutely tetragonal, brown, densely hirtellous-pubescent; nodes annulate; principal internodes 0.8--5.5 cm. long; leaf-scars large and ampliate, borne on very short appressed sterigmata; leaves decussate-opposite; petioles slender, 7--20 mm. long, densely pubescent; blades chartaceous or submembranous, uniformly green on both surfaces

or usually blackening above in drying, dull or subnitid, oblong or ovate to ovate-elliptic, 2.9--11.1 cm. long, 1.5--4.8 cm. wide, acute or short-acuminate at the apex, entire or sometimes sparingly serrate with 4--6 blunt appressed teeth above the middle, abruptly acute or subacuminate at the base, bearing a pair of inconspicuous elongate glands at the very base beneath, sparsely or densely short-pubescent or puberulent above (especially along and near the midrib), densely hirtellous or subvelutinous-pubescent beneath; midrib slender, prominent beneath; secondaries slender, 4 or 5 pairs, arcuate-ascending, obscurely or not at all anastomosing, prominent beneath; vein and veinlet reticulation fine, often obscure; racemes axillary and terminal, simple or bearing a pair of branches at the base, erect or nutant, the main racemes 4--15 cm. long, about 1 cm. wide, the lateral branches almost as long as the central raceme, densely many-flowered; peduncles slender, 5--17 mm. long, densely pubescent, tetragonal; rachis slender, densely brown-pubescent like the peduncles; pedicels filiform, 1--2 mm. long, pubescent; bracts and bractlets absent; prophylla linear-subulate, 1--2 mm. long, pubescent; calyx campanulate, 2.3--3.3 mm. long, 2.3--2.8 mm. in diameter, more or less 5-costate, pubescent, the rim 5-dentate, the teeth triangular, about 0.5 mm. long, 1 mm. wide at the base, acute at the apex; corolla hypocrateriform, varying from greenish or whitish to cream-colored or yellowish, its tube about 2.6 mm. long, about 1.4 mm. wide at the base and to 2.6 mm. wide at the apex, glabrous externally, densely pilose at the throat within, the limb 5-parted, the lobes very variable in size, oblong-lingulate, about 2 mm. long and 1.3 mm. wide, rounded at the apex; stamens 5, included, 4 subequal and inserted about 1.3 mm. below the mouth of the corolla-tube, the filaments about 0.6 mm. long, the anthers ovate, about 0.7 mm. long and 0.6 mm. wide, the fifth stamen much smaller; pistil included; style rather short, about 1.5 mm. long, glabrous; stigma very shortly 2-lobed; ovary obovate, about 1.6 mm. long and wide, glabrous; fruiting-calyx indurated, shallowly campanulate or patelliform, to 2.5 mm. long and 5 mm. wide, puberulent or pubescent, its rim subtruncate, entire or obsoletely 5-angulate; fruit subglobose, 5--6 mm. long and wide, fleshy, glabrous, green and reddish-tinged when immature, becoming brownish or red to black when mature, black and wrinkled in drying, 2-lobed.

The type of this species was collected by José Jerónimo Triana (no. 2071) at Caqueza, near Bogotá, Cundinamarca, Colombia, at an altitude of 2000 meters, between 1851 and 1857, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The species is said to inhabit dry banks and plains at altitudes of 1000--2000 meters. It has been confused with C. cinereum L. [= C. fruticosum L.] in herbaria. André describes it as a tree to 6 m. tall, with elongate branches and whitish flowers. Haught reports it "abundant" in Cundinamarca. It has been collected in anthesis in February, April, June, July, and November, and in fruit in January, April, July, September, and November.

The Pennell collection differs somewhat from the usual form in

its almost glabrate branches and branchlets and its firmer, smaller, non-discoloring leaves, with their venation obscure above, but in all other respects is identical with this species.

The leaf-blades of *C. karsteni* are often decidedly velutinous beneath (e.g., Rusby & Pennell 366 in the Britton Herbarium), and this pubescence in such specimens usually extends also to the petioles, twigs, branchlets, peduncles, rachis, pedicels, calyx, fruiting-calyx, and to a lesser extent to the upper leaf-surfaces and older branches.

In all, 37 herbarium specimens and 8 mounted photographs, including the type, have been examined.

Citations: COLOMBIA: Boyacá: André K.1552 (K); Karsten s.n. [um Sogamozo] (L). Cundinamarca: André 1334 (K, N), 1500, in part (F--533614), 1675 (K, N); Dugand 3544 (W--1852306); H. García y Barriga 4851 (W--1594224); Goudot s.n. [Aype] (K, P), s.n. [Chochachi] (K, P), s.n. [Pandi] (P); Haught 5849 (N); Karsten s.n. [Aype] (X), s.n. [Caqueza] (V); Lehmann 8778 (B, F--689798, K); Mutis 4372 (W--1561459); F. W. Pennell 1870 (E--843883, G, N, N, W--1041983); Triana 262 [3706-1] (Hn), 2071 [Macbride photos 28395] (B--photo of type, Bm--isotype, Cb--isotype, Ed--isotype, F--830279--photo of isotype, K--photo of type, Kr--photo of isotype, N--isotype, N--photo of type, N--photo of isotype, P--type, S--photo of type, V--isotype, Z--photo of type), 3706 (Ba). Huila: E. L. Little 8968 (N, N); Rusby & Pennell 366 (N).

CITHAREXYLUM KARSTENI var. *LANCEOLATUM* Moldenke in Fedde, Repert. 37: 228. 1934.

Literature: Moldenke in Fedde, Repert. 37: 228. 1934; Apolinar-Maria, Revist. Acad. Colomb. 1: 358. 1937; Moldenke, Geogr. Distrib. Avicenn. 19. 1939; Moldenke, Suppl. List Invalid Names 1 & 16. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 88. 1942; Moldenke, Alph. List Cit. 1: 11, 133, 135, 195, 243, 317, & 319 (1946), 2: 348 & 643 (1948), 3: 912 (1949), and 4: 1071, 1076, & 1078. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 59 & 179. 1949; Moldenke, Phytologia 4: 120. 1952.

Illustrations: Apolinar-Maria, Revist. Acad. Colomb. 1: 358 [as *C. cinereum*] (colored). 1937.

This variety differs from the typical form of the species in its narrower, lanceolate or oblong-lanceolate leaf-blades, which are 3--10.5 cm. long and 0.8--2.5 cm. wide. It is described as a small tree, to 6 m. tall; trunk 5--10 cm. in diameter at breast height; bark gray or blackish, smooth or slightly fissured; racemes often very numerous, axillary and terminating short axillary twigs, simple or with 2 basal branches almost as long as the central part; calyx green; corolla varying from white or greenish-white to greenish-yellow, clear yellow-green, pale-yellow, or yellow; fruit in pendulous racemes, at first orange, then dark-purple or black, fleshy, 2-seeded.

The type of the variety was collected by Friedrich Carl Lehmann (no. 8718) at Garzon, above Tolima, department of Tolima,

Colombia, at an altitude of 500--1200 meters, and is deposited in the Gray Herbarium at Harvard University. Collectors have found the plant in dry thickets, cleared areas of thickets, floodplains, and on "xeric flats apparently rather recently flooded, heavily grazed, the dominant species being Jatropha gossypifolia, Acacia farnesiana, Cereus sp., Opuntia sp., Melocactus sp., etc." Mason says that it resembles the genus Rhamnus, and that it is found on dissected plains or badlands. It has been found at altitudes of 500 to 3100 meters.

The "Citharexylum cinereum L." illustrated in color by H. Apolinar Maria in his Vocab. Term. Vulg. Hist. Nat. Colomb. (Revist. Acad. Colomb. 1: 358. 1937) and described in his text as C. tomentosum H.B.K. is actually C. karsteni var. lanceolatum. The common names "agracejo" and "palo blanco" which he lists and which I erroneously cited in 1940 and in Phytologia 2: 97 (1944) as C. tristachyum Turcz., a Cuban species, actually apply to C. karsteni var. lanceolatum. "Agracejo" also applies to C. dawei Moldenke and to C. fruticosum L., while "palo blanco" is a name given also to C. kunthianum Moldenke and to Rehdera penninervia Standl. & Moldenke. Other common names recorded for C. karsteni var. lanceolatum are "chibero" and "maiz tostado". It has been collected in anthesis in February, April, June, August, November, and December, and in fruit in February, June, and August. In all, 34 herbarium specimens, including the type, and 7 mounted photographs have been examined.

Citations: COLOMBIA: Cundinamarca: André 1500, in part (K, N); Arbeláez 2542 (W--1615651); Cuatrecasas 9663 (W--1795909); Cuatrecasas & Jaramillo 11992 (W--1850848); Estanislas Fel. s.n. [Apolinar-Maria 513] (F--990258); Schultze 199 (B). Huila: Fosberg 19317 (N, N); Little 7262 (N), 7316 (N), 8149 (N), 8437 (N), 8967 (N), 9058 (N); H. L. Mason 13799 (N, W--2047881). Tolima: Goudot s.n. [Honda] (P); F. C. Lehmann 8717 (Cb, F--559896, F--578230, G, K, Le, N, N, N--photo, V, Z--photo), 8718 (B--photo of type, F--559897--isotype, F--578228--isotype, G--type, K--isotype, K--photo of type, Le--isotype, N--isotype, N--photo of type, Qu--isotype, S--photo of type, Z--photo of type).

CITHAREXYLUM KERBERI Greenm., Field Columb. Mus. Publ. Bot. 2: 187--188. 1907.

Literature: Greenm., Field Columb. Mus. Publ. Bot. 2: 187--188. 1907; Prain, Ind. Kew. Suppl. 4: 49. 1913; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Alph. List Common Names 1. 1939; Moldenke, Suppl. List Common Names 1. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Phytologia 2: 96. 1944; Moldenke, Alph. List Cit. 1: 287 (1946) and 2: 607. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 66. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Alph. List Cit. 3: 714 (1949) and 4: 1020 & 1057. 1949; Moldenke, Phytologia 3: 465. 1951.

Shrub or tree; branches and branchlets medium, obtusely or subacutely tetragonal, not margined, gray, obscurely pulverulent-puberulent or subglabrous; twigs and young shoots more slender, brown, densely short-pubescent; nodes obscurely or not at all annulate; principal internodes 1-6.8 cm. long; leaf-scars subsessile or on extremely short and inconspicuous sterigmata; leaves decussate-opposite, often unequally paired; petioles slender, 3.5-10 mm. long, short-pubescent or puberulent; leaf-blades membranous or subchartaceous, very dark-green on both surfaces, blackening in drying, broadly oblong or elliptic, 3-14 cm. long, 2.1-6.6 cm. wide, short-acuminate at the apex (sometimes rounded or emarginate on small and stunted leaves), entire, acute or cuneate into the petiole at the base, sparsely strigillose above, becoming glabrous, densely tomentose-pubescent with short brownish hairs beneath, with a pair of black glands at the base; midrib slender, mostly plane above, prominent beneath; secondaries slender, 6-10 pairs, plane or very slightly subimpressed above (on thicker leaves), prominulous beneath, arcuate-ascending, not conspicuously anastomosing, often obscure above; vein and veinlet reticulation obscure above, more or less prominulous beneath; racemes terminating short branchlets, erect or nutant, simple, 15-18 cm. long, to 2.6 cm. wide (!), loosely many-flowered; peduncles slender, 2-3.2 cm. long, short-pubescent; rachis slender, short-pubescent or canescent; pedicels filiform, less than 1 mm. long or obsolete; bracts few, foliaceous, lanceolate; bractlets absent; prophylla linear, 1-3 mm. long; calyx tubular, 6-7 mm. long, pubescent on both surfaces, its rim subulately 5-dentate; corolla hypocrateriform, about twice as long as the calyx, 12-15 mm. long, puberulent in the throat at the base of the lobes and in the upper part of the tube, otherwise glabrous, the tube 8-10 mm. long, the lobes obovate to obovate-cuneate, 3-4.5 mm. long, about 2/3 as broad; perfect stamens 4, included, the fifth much reduced, often only a staminode; style glabrous; ovary glabrous; fruit elliptic, somewhat more than 2.5 cm. long and 2 cm. wide, hard, not fleshy, sparsely verruculose.

The type of this species was collected by Edmund Kerber (no. 430) — in whose honor it was named — somewhere in Mexico, and is deposited in the United States National Herbarium at Washington. It has been collected in flower and fruit in May. Common names reported are "aceitumillo" and "aceitunillo". In Java it has been confused with *C. laetum* Hiern. In all, 20 herbarium specimens, including the type, and 5 mounted photographs have been examined.

Citations: MEXICO: Vera Cruz: *Matuda* 1424 (Dp-28976, Mh, Mi, Mi, Mi, N, N, N). State undetermined: *Kerber* 430 (B-photo of type, K-photo of type, N-isotype, N-photo of type, S-photo of type, W-48149-type, W-1323212-isotype, Z-photo of type). CULTIVATED: Java: *Mus. Hort. Bot. Bogor. XI.G.50* (Bz, Bz-25731, N), *XI.G.52* (Bz-25736, Bz-26527, N), *XI.G.52a* (Bz, N).

CITHAREXYLUM KOBUSKIANUM Moldenke, Geogr. Distrib. Avicenn. 23,

nom. nud. (1939); *Phytologia* 1: 441—442. 1940.

Literature: Moldenke, Geogr. Distrib. Avicenn. 23. 1939; Moldenke, *Phytologia* 1: 441—442. 1940; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 34 & 88. 1942; *Bol. Mus. Hist. Nat. Jav. Prado* 7: 246. 1943; *Salisb., Ind. Kew. Suppl.* 10: 53. 1947; H. N. & A. L. Moldenke, *Pl. Life* 2: 67. 1948; Moldenke, *Alph. List Cit.* 2: 581 (1948) and 3: 838. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 71 & 179. 1949.

Tree; branches medium-slender, grayish, glabrous; youngest twigs very slender, brownish, minutely puberulent; nodes somewhat ampliate; principal internodes 1—4 cm. long; older leaf-scars large, prominent, corky; leaves decussate-opposite; petioles very slender, 2—5 mm. long, minutely puberulent; leaf-blades chartaceous, uniformly dull-green on both surfaces, oblong or oblong-elliptic, 2.5—5 cm. long, 1.5—2.2 cm. wide, acute and very shortly apiculate at the apex, entire, acute or shortly acuminate at the base, very sparsely puberulent above, densely puberulent beneath; midrib slender, subimpressed and densely puberulous above, prominulous beneath; secondaries slender, 7—10 per side, slightly arcuate-ascending, obscure above, slightly prominulous beneath; veinlet reticulation indiscernible above, very slightly prominulous beneath; inflorescence axillary, racemiform, to 6.5 cm. long, many-flowered; rachis slender, puberulent; corolla white-violet; fruiting-calyx very light and herbaceous, puberulent externally; fruiting-pedicels about 3 mm. long, brownish-puberulent; fruit subglobose or oblong, about 5 mm. long and 4 mm. wide, fleshy, glabrous.

The type of this species was collected by Constantin von Jelsky (Raimondi 6303) at Chota, Chichayro, Cajamarca, Peru, on September 10, 1877, and is deposited in the herbarium of the Botanisches Museum at Berlin. The published list of Raimondi's herbarium gives the collection date as "Agosto de 1877", but the label on the type is plainly inscribed "10. Sept." The species is named in honor of Dr. Clarence Emmeren Kobuski, who has produced an excellent monograph of the genus *Priva*. The collector's name is misspelled "Jelski" on the labels. The species has been found in anthesis in June. In all, 3 herbarium specimens, including the type, and 5 mounted photographs have been examined.

Citations: PERU: Cajamarca: Jelsky s.n. [Raimondi 6303] (B—type, E—photo of type, N—isotype, N—photo of type, S—photo of type, W—photo of type, Z—photo of type). La Libertad: López Miranda 648 (W—2058262).

CITHAREXYLUM KRUKOVII Moldenke in Fedde, *Repert.* 37: 228—229. 1934.

Literature: Glaz., *Bull. Soc. Bot. France Mém.* 3: 545. 1911; Moldenke in Fedde, *Repert.* 37: 228—229. 1934; Hill, *Ind. Kew. Suppl.* 9: 67. 1938; Moldenke, *Geogr. Distrib. Avicenn.* 25. 1939; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 36 & 88. 1942; Moldenke, *Alph. List Cit.* 1: 237 (1946) and 2: 621. 1948; H. N. & A. L. Moldenke, *Pl. Life* 2: 67. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 76 & 179. 1949.

Tree, to 7 m. tall; branches and branchlets thick, tetragonal, more or less 4-margined, glabrous; principal internodes 1.3—7.5 cm. long; leaf-scars thick, ascending, about 4 mm. long; leaves leaves decussate-opposite; petioles thick, 8—11 mm. long, subverruculose, deeply canaliculate above, glabrous; leaf-blades firmly chartaceous or subcoriaceous, elliptic, 7.7—14.8 cm. long, 5.8—9.1 cm. wide, obtuse or acute at the apex, entire, acute at the base, glabrous above, densely velutinous-pubescent beneath; secondaries 5—9 per side, prominent beneath, arcuately anastomosing near the margins; racemes axillary, opposite, 4.5—10 cm. long, about 1.8 cm. wide, loosely many-flowered; peduncles and rachis slender, puberulent; pedicels absent; calyx campanulate, about 5.2 mm. long and 3.9 mm. wide, puberulent, irregularly marked with depressed crateriform glands, the rim conspicuously 5-lobed, the lobes triangular, about 1.8 mm. long, about 2.3 mm. wide at the base, obtuse or subapiculate at the apex; corolla hypocrateriform, white or yellow, its tube broadly cylindrical, straight, about 7 mm. long, uniformly 2.3 mm. wide, glabrous externally, densely pilose in the throat within, the limb 5-parted, the lobes subspatulate-lingulate, about 3.6 mm. long and 2 mm. wide, obtuse at the apex; stamens 4, distinctly didynamous, included, two inserted about 1.8 mm. and the other two about 2.5 mm. below the mouth of the corolla-tube; filaments about 0.7 mm. long; anthers oblong-ovate, about 1 mm. long and 0.5 mm. wide; pistil included; style rather thick, about 1.8 mm. long, glabrous; stigma very shortly 2-lobed, the lobes about 0.6 mm. long; ovary rounded, about 1.5 mm. long and wide, glabrous, inserted on a short glabrous 10-dentate disk which closely invests its base; fruiting-calyx and fruit not known.

The type of this species was collected by Boris Alexander Krukoff (no. 2048) — in whose honor it was named — on terra firma in the high forest near Lorenda, in the region of Rio Grajahu, Maranhão, Brazil, on March 27, 1933, and is deposited in the Britton Herbarium at the New York Botanical Garden. It has been found also in woods and secondary forests, flowering in January, June, and July. It is very closely related to C. glaziovii Moldenke, which, however, has different venation in the leaf-blades, the flowers are larger, the calyx is heavier, and the pubescence is more velutinous. It is also closely related to C. laetum Hiern, and, in fact, the Glaziou 11245 collection cited below was reported by the collector in the reference listed above as C. laetum. In all, 8 herbarium specimens, including the type, have been examined.

Citations: BRAZIL: Maranhão: Fröes 25678 (N); Krukoff 2048 (B—isotype, Cb—isotype, K—isotype, K—isotype, N—type). Minas Gerais: Glaziou 11245 (B, P).

CITHAREXYLUM KUNTHIANUM Moldenke, Phytologia 2: 51. 1941.

Synonymy: Citharexylum tomentosum H.B.K., Nov. Gen. & Sp. Pl. 2: 258. 1817 [not C. tomentosum Poir., 1811, nor Sessé & Moc., 1831, nor Klotzsch & Karst., 1940]. Citharexylum tomentosum Humb.

& Bonpl. ex Steud., Ncm. Bot., ed. 1, 202. 1821. Citharexylum tomentosum H.B.K. apud Walp., Repert. 4: 76. 1845. Citharexylum tomentosum Kunth apud Schau. in A. DC., Prodr. 11: 513. 1847.

Literature: Poir. in Lam., Encycl. Méth. Suppl. 2: 368. 1811; H.B.K., Nov. Gen. & Sp. Pl. 2: 258. 1817; Walp., Repert. 4: 76. 1845; Schau. in A. DC., Prodr. 11: 613. 1847; Jacks., Ind. Kew. 1: 550. 1893; Apolinar-Maria, Revist. Acad. Colomb. 1: 358. 1937; Moldenke, Geogr. Distrib. Avicenn. 19. 1939; Moldenke, Suppl. List Common Names 6 & 16. 1940; Moldenke, Phytologia 2: 51. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31, 32, & 88. 1942; Moldenke, Phytologia 2: 96. 1944; Moldenke, Alph. List Cit. 1: 10, 11, 157, 166, 170, 243, & 273 (1946) and 2: 328, 349, 460, 529, 557, 573, 603, & 642. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 67. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 59, 62, & 179. 1949; Moldenke, Alph. List Cit. 3: 691, 758, 808, 817, & 950 (1949) and 4: 1005, 1006, 1040, 1047, 1073, & 1075. 1949; Moldenke, Phytologia 3: 484. 1951; Salisb., Ind. Kew. Suppl. 11: 55. 1953.

Tall shrub or small tree, to 15 m. tall; trunk to 40 cm. in diameter; wood white, heavy, durable; bark gray and smooth or light brown-tan and peeling off in long thin pieces or layers; branches alternate, terete, glabrous; branchlets medium, obtusely tetragonal, light-brown, densely furfuraceous-puberulent or tomentose with ochraceous or incanous to cinereous hairs, eventually becoming subglabrate; twigs more slender, densely furfuraceous-tomentose with ochraceous hairs, occasionally densely villous-tomentose; nodes annulate; principal internodes 1.2-8.4 [-12] cm. long; leaf-scars borne on very short flattened sterigmata; leaves decussate-opposite or whorled in 4's; petioles slender or stoutish, 1-3.5 cm. long, rather densely furfuraceous-tomentose, sometimes bearing 1 or 2 large glands similar to those on the base of the blades; leaf-blades firmly chartaceous, dark-green above, lighter beneath, ovoid-elliptic or elliptic, 4.5-22 cm. long, 3-10 cm. wide, acute or short-acuminate at the apex (often bluntly so), entire, broadly acute or subacuminate at the base, very lightly furfuraceous-puberulent (especially along the midrib) or scabrellous above (more densely so when young), very densely tomentose beneath with incanous or ochraceous hairs, with a pair of blackish glands at the very base, often with scattered glands over the whole lower surface (conspicuous because no tomentum covers them); midrib slender, very prominent beneath, often subimpressed and furfuraceous above; secondaries very slender, about 10 pairs, prominent beneath, often subimpressed above, ascending at an angle of about 45°, not very arcuate; vein and veinlet reticulation obscure or very slightly impressed above, prominent but mostly hidden beneath; racemes axillary and terminal, erect or nutant, simple or compound with 1-3 pairs of branches, 3.5-22 cm. long, 1-1.5 cm. wide, densely many-flowered; peduncles and rachis slender or stoutish, densely furfuraceous-tomentose like the twigs, the former 1.5-3.5 cm. long; bracts foliaceous, spatulate, densely furfuraceous-tomentose, often absent; bractlets linear, to 1 cm. long, densely furfuraceous,

often absent; pedicels obsolete or to 1 mm. long; prophylla linear, about 1 mm. long, mostly hidden by the tomentum; flowers fragrant, dense; calyx subsessile, campanulate or cyathiform, clear-green when fresh, about 4 mm. long, densely incanous-tomentose on both surfaces, its rim shortly and obtusely dentate; corolla white or pale-yellow, infundibular, its tube equaling or slightly surpassing the calyx, very densely tomentose-villous in the throat, the lobes subrotund, pilose within; stamens 4 (or 5), inserted at the apex of the corolla-tube, included; filaments very short; anthers linear; fruiting-calyx indurated, cupuliform, about 3 mm. long and 6 mm. wide, furfuraceous-tomentose, its rim rather deeply and irregularly 5-lobed, with acute or rounded lobes; fruit globose or oblong, about 6 mm. long and 5 mm. wide, rather fleshy, green when immature, red or scarlet when ripe, nitid, glabrous, wrinkled and 2-sulcate in drying, composed of 2 pyrenes, the pyrenes 2-locular, the cells 1-seeded.

The type of this species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland (no. 5898) in the valley of the Rio Cauca, between the village of Tulu and the town of Buga, in the vicinity of Popayan, Valle del Cauca, Colombia, at an altitude of 500 hex., and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The species is named in honor of Carl Sigismund Kunth, who prepared the text of the work in which this species was first described. It has been collected in thickets, dry and semidesert thickets, near watercourses through dry terrain, thickets along streams, and on "brushy river bluffs with seeps of water, generally rather dry." Little says that it is "common on cleared hillsides, forms thickets". It has been found at altitudes of 200 to 2225 meters, blooming from September to January and in March, May, and July, and in fruit from July to September and December to March.

The Lehmann 799 collection, cited below, is remarkable in that its leaves are quaternate at every node and the internodes are to 12 cm. in length. Torrey reports that the ovary is 4-celled, with a solitary ovule in each cell. Duque states that the wood is used for the handles of farmers' tools. Triana 2112 is noteworthy because of its extremely long and villous tomentum on the twigs, peduncles, pedicels, rachis, and corollas. Mostly in this species the tomentum is merely furfuraceous or furfuraceous-tomentose. Triana 3738 [20] has a large leaf with a truncate base and very heavy long rachids, as are seen in C. subflavescens Blake, and may actually represent that species. The Dryander 50 cited below may have come from Valle del Cauca, since its label is inscribed merely "Yumbo".

Specimens of this species have been confused in herbaria with the genus Buddleia of the Loganiaceae and with Ehretia and Varronia of the Ehretiaceae. The colored picture in H. Apolinar-Maria's Vocab. Term. Vulg. Hist. Nat. Colomb., published in Revist. Acad. Colomb. 1: 358 (1937), labeled "C. cinereum", and

described in the text as C. tomentosum H.B.K., is actually C. karsteni var. lanceolatum Moldenke. The vernacular name "agracejo" which he records doubtless also belong the the latter variety. "Palo blanco" and "asusena" apparently apply to C. kunthianum — the first of these, however, is also applied to C. karsteni var. lanceolatum and to Rehdera penninervia Standl. & Moldenke. The name "cotelet tomenteux", recorded by me in *Phytologia* 2: 96 (1944), apparently belongs to C. fruticosum var. villosum (Jacq.) O. E. Schulz, since it applies to C. tomentosum Poir.

In all, 59 herbarium specimens, including the types of all the names involved, and 10 mounted photographs have been examined.

Citations: COLOMBIA: Cundinamarca: Antonio C. s.n. [Apolinar-Maria 81] (F—1007413); Goudot B.1 (K, P); Mutis 704 (W—1561461); Triana 20 (Bm), 3738 [20] (Jc). El Cauca: André 2467 (K), K.1550 (K); Dryander 50 (B); Haught 5128 (N); Holton 519 [La Paila] (D—611879, G, G, K, N, T, X); Karsten s.n. [Cauca] (V); Pittier 606 (B, W—530796); Sneidern 2816 (S); Triana 2029 (Ed), 2112 (B, Bm, Cb, P, V), 3738 [19] (Jc). Huila: Fosberg 19232 (N, N); Little 7464 (N), 7905 (N), 9247 (N). Nariffo: Garganta Fábrega 532 (F—1273540). Tolima: Goudot s.n. [San Luis] (K, P). Valle del Cauca: Bonpland 1898 (N, P, P, P); Cuatrecasas 15364 (F—1334189, F—1334190, N), 23017 (N), 23691 (F—1341819); Duque 1736 (W—1744577); Humboldt & Bonpland 5898 [Herb. Willdenow 11476; Macbride photos 17602] (B—isotype, F—663031—photo of isotype, K—photo of isotype, Kr—photo of isotype, Mi—photo of type, N—photo of type, N—photo of isotype, N—photo of isotype, S—photo of isotype, P—type, Z—photo of type, Z—photo of isotype); F. C. Lehmann 799 (Bm, K, X), 1967 (B, K, W—938450); Pennell & Killip 6187 (G, W—1142046). State undetermined: Herb. Link s.n. [Am. mer.] (B). VENEZUELA: Federal District: Delgado 201 (W—1778780). CULTIVATED: Ecuador: Asplund 16986 (S).

CITHAREXYLUM LAETUM Hiern, Vidensk. Meddel. Naturhist. Kjøben.

1877: 104 [as "Citharexylon"]. 1877; Jacks., Ind. Kew. 1: 550. 1893.

Synonymy: Citharexylum laetum Hieron. ex Moldenke, Alph. List Common Names 7, 9, 16, 28, & 29, sphalm. 1939. Citharexylon laetum Hieron. ex Moldenke, Prelim. Alph. List Invalid Names 15, in syn. 1940.

Literature: Hiern, Vidensk. Meddel. Naturhist. Kjøben. 1877: 104. 1877; Warm., Symb. Fl. Bras. Cent. 710. 1877; Jacks., Ind. Kew. 1: 550. 1893; Glaz., Bull. Soc. Bot. France Mem. 3: 545. 1911; Moldenke, Alph. List Common Names 7, 9, 16, 28, & 29. 1939; Moldenke, Geogr. Distrib. Avicenn. 25. 1939; Moldenke, Prelim. Alph. List Invalid Names 15. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 36 & 88. 1942; Moldenke, Alph. List Invalid Names 13. 1942; Moldenke, *Phytologia* 2: 96—97. 1944;

Moldenke, *Alph. List Cit.* 1: 78, 90, 172, 215, 222, & 236. 1946; Moldenke, *Phytologia* 2: 385. 1947; Moldenke, *Alph. List Invalid Names Suppl.* 1: 5. 1947; Moldenke, *Alph. List Cit.* 2: 332, 431, & 489 (1948), 3: 692, 736, 737, 824, 853, & 890 (1949), and 4: 1025 & 1106. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 76 & 179. 1949; H. N. & A. L. Moldenke, *Anal. Inst. Biol. Mex.* 20: 4. 1949; Moldenke, *Phytologia* 3: 286. 1950; Stellfeld, *Trib. Farmac.* 19 (10): 169. 1951.

Tree or shrub, to 7 m. tall; branches and branchlets rather stout, more or less tetragonal, brown, lenticellate, glabrate; nodes rather obscurely annulate; principal internodes 1.5--5 cm. long; leaf-scars large, borne on stout ascending sterigmata to 4.5 mm. long; leaves decussate-opposite, or subopposite on young shoots; petioles rather stoutish, 1--2.7 cm. long, canaliculate above, glabrate; leaf-blades firmly chartaceous, dark-green above, lighter beneath, shiny on both surfaces, oblong or oblong-elliptic to elliptic, 7--18.5 cm. long, 2--9.4 cm. wide, acute or short-acuminate (rarely rounded and submarginate) at the apex, entire, acute at the base and prolonged into the petiole, bearing a pair of narrow and elongate or often extremely large and conspicuous glands (which are to about 4 mm. long and 2.5 mm. wide) on the prolongation (except on the smallest leaves), glabrous on both surfaces; midrib stout, plane or subimpressed (on older leaves) above, prominent beneath; secondaries slender, 7--10 pairs, arcuate-ascending (often only slightly arcuate), plane or impressed (on older leaves) above, prominent beneath; vein and veinlet reticulation fine, abundant, slightly prominent and conspicuous to the last detail beneath, the larger parts often subimpressed or sometimes prominent above; racemes terminal, erect, 7--27 cm. long, rather loosely many-flowered, simple; peduncles stoutish, more or less tetragonal, 7--10 mm. long, brown, glabrate; rachis stoutish, brown, glabrate or minutely puberulent; pedicels obsolete or to 2.5 mm. long (in fruit); bracts and bractlets absent; prophylla setaceous-subulate, about 1 mm. long; calyx light or heavy, 3--5 mm. long; corolla whitish; fruiting-calyx greatly incrassate and indurated, shallowly cupuliform or subpatelliform, about 6 mm. long and 12 mm. wide, more or less scarious at the rim, not ribbed, glabrous, its rim deeply and rather irregularly 5-lobed; fruit oblong, large, to 17 mm. long and 11 mm. wide, not very fleshy, dull, glabrous.

The species is based on several cotype collections, including two collected by Johannes Eugenius Btlow Warming (nos. 601 and 790) at Babosa and Lagoa Santa, the latter on March 14, 1864, Minas Gerais, Brazil, and deposited in the herbarium of the Universitetets Botaniske Museum at Copenhagen. It is said to inhabit woods and mountainous regions, especially areas near rivers and lakes, and has been collected in anthesis from October to January and in May, and in fruit in January and April. It is remarkably variable in the size of its leaves, the character of the leaf-venation on the upper surface, the basal glands, the calyx, and the flowers in general. It may well be that several taxa are herein included and further study may differentiate.

The Burchell specimens are remarkable small-leaved and short-racemed. Pohl 146 has its uppermost leaves exhibiting extremely large basal glands, among the largest seen in the entire genus, while the lower leaves show no trace of glands. These same large and very conspicuous glands are seen on Fróes 1719, which was distributed as this species, but which is now the type collection of C. ulei var. calvescens Moldenke. Many other collections show only narrow and more or less elongate inconspicuous glands, or none at all. It is strange to note that on many specimens the largest basal glands seem to be borne on the youngest (apical) leaves, while the older (lower) leaves have inconspicuous glands or none at all (vid. Mikan 5360 at Kew). Very young leaves are submembranous, while very old ones are very firm and stiff. Strange swellings of the midrib are frequently seen and may be due to gall insects (e.g., Warming s.n. at Copenhagen). Some of the Warming specimens have the secondaries and larger veinlets distinctly impressed above; others have the entire venation prominent above. On Warming s.n. at Copenhagen the calyx is very large and heavy, uniformly 5 mm. long, while on Warming 790, in the same herbarium, it is light and uniformly only 3 mm. long. In all other respects the two collections do not exhibit any tangible differences.

Specimens of this plant have been confused in herbaria with C. cinereum L. [= C. fruticosum L.], C. myrianthum Cham., and the Ehretiaceae. The Glaziou 11245 cited by Glaziou in Bull. Soc. Bot. France Mém. 3: 545 (1911) as C. laetum is actually the closely related C. krukovii Moldenke. Unfortunately, the nos. 2320 and 4588 which are C. laetum are not listed by Glaziou and so it is not immediately possible to determine where they were collected.

In my earlier works on the Verbenaceae I erroneously accredited this binomial to Georg Hans Emmo Wolfgang Hieronymus (1846—1921) — and in this I have been followed by Stellfeld — instead of to William Philip Hiern (1839—1925).

Common names recorded for C. laetum are "caffecillo", "coffee chocolate", "jacende", "jaglende", "Maria molle", "semina", and "tarumá branco". Of these, however, the last-mentioned applies to Fróes 1719 only and therefore applies more correctly to C. ulei var. calvescens. "Maria molle" is also applied to Vitex rufescens var. abludens (Moldenke) Moldenke.

In all, 38 herbarium specimens, including the cotype collections, and 13 mounted photographs have been examined.

Citations: BRAZIL: Federal District: Moldenke & Moldenke 19592 (N, Sm). Minas Gerais: Warming 601 [Macbride photos 22774, in part] (Cp—cotype, F—687353—photo of cotype, Kr—photo of cotype, N—photo of cotype, N—photo of cotype, Z—photo of cotype), 790 [Macbride photos 22774, in part] (B—photo of cotype, Cp—cotype, F—687353—photo of cotype, K—photo of cotype, Kr—photo of cotype, N—photo of cotype, N—photo of cotype, S—cotype, S—photo of cotype, Z—photo of cotype), s.n. [Babosa, 14/12/64] (Cp), s.n.

[Babosa, 13 December] (Cp, P), s.n. [Lagoa Santa, 23/XI/64] (Cp), s.n. [Lagoa Santa] (Bm, Cp, N). Parana: Dusén s.n. [Morretes] (S). Rio de Janeiro: G. Gardner 733 (Bm, Cb, K, K); Miers s.n. [Organ Mts.] (Bm); Mikan 5360 [146] (K, V, V), s.n. [Rio de Janeiro] (Br); J. E. Pohl 146 (B). São Paulo: Burchell 3264 (K), 4377 (K, K); Campos Novaes 938 (W--389899); Saint-Hilaire C².1215 (N, P, P, P, P). State undetermined: Glaziou 2320 (Bm), 4588 (Bm); J. E. Pohl s.n. [Brasilia] (Br, Br, Mu--754); K. Richter s.n. [Herb. Schott] (Vu).

CITHAREXYLUM LANKESTERI Moldenke in Fedde, Repert. 37: 229. 1934.

Literature: Moldenke in Fedde, Repert. 37: 229. 1934; Standl., Field Mus. Publ. Bot. 18: 1001. 1938; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 17. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 22 & 88. 1942; Moldenke, Alph. List Cit. 1: 317 (1946) and 2: 633. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 68. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 39 & 179. 1949; Moldenke, Alph. List Cit. 3: 780. 1949.

Shrub or tree, to 7.5 m. tall; trunk to 26 cm. in diameter; branchlets rather stout, obtusely tetragonal, medullose, nigrescent in drying, densely stellate with short whitish or grayish hairs, often so densely so (on younger shoots) as to appear tomentose; nodes obscurely annulate; principal internodes 4.5--7.5 cm. long; leaf-scars borne on ascending sterigmata which are often 4--11.5 mm. long and densely stellate; leaves decussate-opposite; petioles stout, subtetragonal, margined, often flattened or deeply sulcate above, 2.3--3.5 cm. long, nigrescent in drying, densely stellate-pubescent; leaf-blades firmly chartaceous, very dark-green on both surfaces, shiny above, ovate-oblong or oblong-elliptic to obovate, 17--21 cm. long, 7.3--8.3 cm. wide, acuminate at the apex, entire, slightly subrevolute in drying along the margins, acute at the base and slightly prolonged into the petiole, bearing a pair of elongate glands on the prolongation, glabrous (except for the stellate midrib and secondaries) above, densely stellate-tomentose with many-branched hairs beneath; midrib stout, prominent but often decidedly flattened beneath, very slightly impressed above; secondaries slender or stoutish, 7--9 pairs, arcuate-ascending, plane or subimpressed above, prominulous beneath, not plainly anastomosing; vein and veinlet reticulation prominulous on both surfaces, abundant, conspicuous above to the last detail, mostly hidden by the pubescence beneath; racemes axillary and terminal, erect or nutant, simple or the terminal one often bearing a pair of lateral branches at its base, 10--27 cm. long, rather loosely many-flowered; peduncles slender, 5--7.5 cm. long, densely stellate-tomentose with canescent hairs; rachis slender, densely stellate-tomentose; pedicels slender, to 2 mm. long, stellate; bracts and bractlets absent; prophylla linear-subulate, to 3 mm. long, stellate; calyx campanulate-obconic, slightly curvate and borne asymmetrically on the pedicel, about 3.6 mm. long and 2.8 mm. wide, 5-costate.